UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

REGION 9

IN THE MATTER OF:	
Omega Chemical Corporation	ADMINISTRATIVE ORDER ON CONSENT
12504 East Whittier Blvd. Whittier CA 90602 EPA ID# CAD042245001	U.S. EPA Docket No. RCRA-09-91-0005
RESPONDENT.	Proceeding under §3008(h) of the Resource Conservation and Recovery Act, as amended, 42 U.S.C. §6928(h).

I. JURISDICTION

1. This Administrative Order on Consent ("Consent Order") is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency ("EPA") by §3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 ("RCRA"), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. § 6928(h). The authority vested in the Administrator has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32 dated April 16, 1985, and has been further delegated by the Regional Administrator for Region 9 to the Director of the Hazardous Waste Management Division ("Director").

2. This Consent Order is issued to Omega Chemical Corporation ("Respondent"), the owner and operator of the facility located at, 12504 East Whittier Blvd., Whittier, California 90602, Los Angeles County ("Facility"). Respondent consents to and agrees not to contest EPA's jurisdiction to issue this Consent Order and to enforce its terms. Further, Respondent will not contest EPA's jurisdiction to: compel compliance with this Consent Order in any subsequent enforcement proceedings, either administrative or judicial; require Respondent's full or interim compliance with the terms of this Consent Order; or impose sanctions for violations of this Consent Order.

II. PARTIES BOUND

1. This Consent Order shall apply to and be binding upon Respondent and its officers, directors, employees, agents, successors and assigns, and upon all persons, independent contractors, contractors, and consultants acting under or for Respondent.

2. No change in ownership or corporate or partnership status relating to the Facility will in any way alter Respondent's responsibility under this Consent Order.

3. Respondent shall provide a copy of this Consent Order to all contractors, subcontractors, laboratories, and consultants retained to conduct or monitor any portion of the work performed pursuant to this Consent Order within one (1) week of the effective date of this Consent Order or date of such retention, and shall condition all such contracts on compliance with the terms of this Consent Order.

4. Respondent shall give notice of this Consent Order to any successor in interest prior to transfer of ownership or operation of the Facility and shall notify EPA within seven (7) days prior to such transfer.

III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objectives of EPA and Respondent are: (1) to perform Interim Measures (IM) at the Facility to relieve threats to human health or the environment, and (2) to perform a RCRA Facility Investigation (RFI) to determine fully the nature and extent of any release of hazardous waste and hazardous constituents at or from the Facility.

IV. FINDINGS OF FACT

1. Respondent is a California corporation, doing business in the State of California and is a person as defined in §1004(15) of RCRA, 42 U.S.C. §6903(15).

2. Respondent is a generator of hazardous waste and an owner and operator of a hazardous waste management facility located at 12504 East Whittier Blvd. in Whittier, California. Respondent engaged in treatment and storage of hazardous waste at the Facility subject to interim status requirements [40 C.F.R. Part 265].

3. Respondent owned or operated its Facility as a hazardous waste management facility on and after November 19, 1980, the applicable date which renders facilities subject to interim status requirements or the requirement to have a permit under §3004 and §3005 of RCRA, 42 U.S.C. §§6924,,6925.

4. Pursuant to §3010 of RCRA, 42 U.S.C. §6930, Respondent notified EPA of its hazardous waste activity. In a subsequent revised notification dated September 24, 1990, Respondent identified itself as a generator, a transporter, and a treatment and storage facility for hazardous waste.

5. In its original RCRA Part A permit application dated October 7, 1980 (the "Original Part A"), its revised RCRA Part A application dated October 8, 1987 (the "Revised Part A"), and its revised Notification of Hazardous Waste Activity dated September 24, 1990, Respondent identified itself as handling the following hazardous wastes at the Facility (a list of these wastes identified by EPA Hazardous Waste Number and chemical name is attached as Attachment 6):

a. Hazardous wastes exhibiting the characteristics of ignitability, corrosivity, reactivity, or toxicity identified at 40 C.F.R. §§261.20-261.24: D001, D002, D003, D004, D005, D006, D007, D008, D009, D010, D011, D012, D013, D014, D015, D016, D017, D018, D019, D020, D021, D022, D023, D024, D025, D026, D027, D028, D029, D035, D037, D038, D039, D040, D043.

b. Hazardous waste from non-specific sources identified at 40 C.F.R. §261.31 and having the following EPA Hazardous Waste Numbers: F001, F002, F003, F004, F005, F007, F008, F009, F010, F011, F020. F021, F022, F027, F028.

c. Hazardous wastes from specific sources identified at 40 C.F.R. §261.32 and having the following EPA Hazardous Waste Numbers: K001, K002, K003, K004, K005, K006, K007, K008, K009, K010, K011, K012, K013, K014, K015, K016, K017, K018 K019, K020, K021, K022, K023, K024, K025, K026, K027, K028, K029, K030, K031, K032, K033, K034, K035, K036, K037, K038, K039, K040, K041, K042, K043, K048, K049, K050, K051, K052, K062, K083, KO84, K085, K086, K094, K095, K096, K097, K098, K101, K103, K104, K105.

d. Discarded commercial chemical products, manufacturing chemical intermediates, off-specification commercial products or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: P001-P122 (all of the wastes listed in the P-series).

e. Discarded commercial chemical products, manufacturing chemical intermediates, off-specification commercial products, or manufacturing chemical intermediates having the following EPA Hazardous Waste Numbers: U001-U249 (all of the wastes listed in the U-series).

6. Facility Description

a. History - The Facility is located in Whittier, California (population 77,671, 1990 Census) and within one (1) mile of the City of Santa Fe Springs, California (population 16,400, 1990 Census). Respondent owns and operates the Facility, which consists of 40,000 square feet of land. At the Facility, Respondent recycles spent organic chemicals (primarily chlorinated hydrocarbons and chlorinated fluorocarbons) to purity specifications appropriate for reuse. In addition, Respondent reduces the quantity and toxicity of some wastes that cannot effectively be recycled. Respondent uses a variety of chemical, thermal and physical treatment processes to recycle and reduce wastes. (Preliminary Assessment, May 11, 1989, prepared by Ecology and Environment, Inc. (the "Preliminary Assessment"))

Respondent has operated at the Facility since 1976 when it bought out Bachelor Chemical Processing, a company that operated a business similar to Respondent's at this location for approximately five (5) years.

Respondent leased the original Facility property until 1987 when it purchased it from Fred R. Rippy. Rippy had purchased the property in 1963. A business that converted vans to ambulances operated at the Facility between 1966 and 1971. Prior to 1963, Sierra Bullets, Inc. was located at the Facility. Although the nature of its operations is unknown, Sierra Bullets allegedly stored kerosene in the underground tank that was removed from the Facility in 1987. (Preliminary Assessment.)

The Facility originally consisted of 20,000 square feet of land (See Figure 1, Attachment 5). On January 25, 1989, Respondent filed a Notice of Intent to Apply for a Specified Hazardous Waste Project with the California Department of Health Services ("DHS"). This project was designed to double the size of the Facility by expanding Respondent's operations onto contiguous property of approximately equal size to the southeast of the original parcel of land (See Figure 2, Attachment 5). DHS authorized the project only for operations related to Respondent's status as a generator; no treatment, storage, or disposal units regulated under RCRA were authorized for the new portion of the Facility. The Facility is currently occupying this expanded area.

On October 29, 1990, Respondent filed Part B of the RCRA application for the Facility (the "Part B"). In the Part B, Respondent proposes to expand the Facility further south and west (see Figure 3, Attachment 5), which would approximately double the size of the Facility from 40,000 to 80,000 square feet. (Operation Plan, Part B of RCRA Permit Application for Omega Recovery Services, October 29, 1990.)

b. Waste Management Units - The configuration and kinds of solid waste management units have changed during the time Respondent has operated at the Facility. Past and current Facility diagrams (Figures 2, 3, 7a and 7B of Attachment 5), and lists of units described in the Original Part A, the Revised Part A, and the Part B help to document the changes in types and locations of waste management units at the Facility.

The Original Part A lists the following hazardous waste management process units although their exact location is not known:

600 gallon storage tank
20 gallons per hour incinerator
25,000 gallon storage tank
300 gallons per hour thin film chemical separator
50 gallons per hour distillation column 50 ft. tall
50 gallons per hour distillation column 35 ft. tall
40 gallons per hour distillation column 40 ft. tall
40 gallons per hour distillation column 25 ft. tall
30 gallons per hour steam distillation units
30 gallons per hour distillation column 5 ft. tall
50,000 gallon storage container

The Revised Part A lists the following waste process units, although their exact location is not known:

600 gallon storage tank
20 gallons per hour incinerator
2000 gallons per day pH modification chemical treatment unit
2000 gallons per day organic compounds reactions chemical treatment unit
0.5 ton per hour thermal treatment unit
20,000 gallons per day low temperature oxidation chemical treatment unit
2000 gallons per day dewatering/drying physical treatment unit
9000 gallons per day distillation physical treatment unit
3000 gallons per day evaporation physical treatment unit
2000 gallons per day solidification/stabilization physical treatment unit
50 tons per day fuel production unit
100,000 gallons storage drums
200,000 gallons storage tank

The Part B states that the existing units at the Facility for storage, recycling, treatment and transport of wastes include:

3100 drum capacity drum storage areas
31 waste storage/treatment tanks
3 distillation units
3 thin film evaporation units
1 reactor
1 grinder
1 liquid-liquid separator unit.

Figures 7a. and b. diagram the location of some of these units.

Because the location of waste management units has changed over time, there is incomplete information concerning the relationship between the previous and current waste management units and concerning the connection between waste management units and releases of hazardous waste into the environment at or from the Facility.

Figure 2 in Attachment 5 shows the location of units at the Facility in 1987. Investigations for contamination (described in paragraph 7 below) occurred at the same time the Facility was so configured. Prior to 1989, storage areas were unpaved or paved with asphalt that was not impervious to hazardous waste migration. Ground beneath the tank storage area in the southwest corner of the Facility (as configured in 1987) was noted as having a deteriorating asphalt base during an April 1985 DHS inspection for Interim Status Document Compliance. A subsequent investigation in the southwest area attributed contamination to accidental spillage of chemicals stored in the tank farm. (LeRoy Crandall and Associates, Investigation of Subsurface Soil Contamination at Tank Farm, Omega Chemical Corporation, Whittier, California, June 26, 1985.)

In a report on soil and ground water contamination dated 1988, Respondent's contractor found ground water contamination to be related to soil contamination. Hazardous wastes found in soils and ground water are the same as those hazardous wastes listed in Respondent's Original Part A and Revised Part A. Soil contaminated with hazardous waste was found beneath two drum storage areas. The ground water monitoring well

which detected significant contamination is located downgradient of drum storage areas that existed in 1987. (ENSR Report on Site Assessment Investigations at the Omega Recovery Facility, October 1988.)

c. Waste Management Practices - Wastes that the Respondent accepts at the Facility are usually organic solvents and chemicals, and aqueous wastes with organic waste constituents. These wastes arrive at the Facility in containers and bulk truckloads and are unloaded to container storage areas or storage tanks. Respondent also generates its own containerized wastes from intermediate steps of treatment processing. Respondent pumps bulk materials to a holding tank and then schedules the wastes for treatment in one of several treatment units or transfers the wastes to off-site facilities for further treatment or disposal.

From storage, Respondent transports containerized wastes to treatment areas with fork-lifts. Empty drums are reconditioned or crushed and disposed of off-site as hazardous waste.

Some containers hold both liquid and solid wastes such as paint solvent and oil sludges. Respondent decants liquid into a treatment tank or other containers for further processing, and consolidates the remaining solids with compatible solids in other containers. Respondent repackages non-recyclable wastes into containers and sends the containers to an incinerator off-site.

d. Site Geology - The Facility lies approximately 2.5 miles east of the San Gabriel River and approximately 2 miles southwest of the Puente Hills. The Lakewood Formation, which appears at the ground surface in the area of the site, contains the Gage aquifer and consists of continental deposits of late Pleistocene age. Below the Lakewood Formation is the San Pedro Formation, composed of interbedded layers of sand, gravel, and clay. The San Pedro formation underlies the entire Whittier area and includes from the top, the Hollydale, Jefferson, Lynnwood, Silverado and Sunnyside aquifers. (ENSR, Report on Site Assessment Investigations at the Omega Recovery Facility, October 1988.)

Ground Water

The Facility is located in the Montebello Forebay area of the Central ground water basin of the Coastal Plain of Los Angeles County. Ground water flow is generally southwest, originating in and from an area of recharge and flowing toward an area of discharge. The boundary between the Montebello Forebay and the Central Basin Pressure Area lies hydraulically downgradient, approximately 6 miles. In pressure areas, aquifers are thought to be confined between layers of relatively impermeable materials with considerable lateral extent. Actual relationships between low permeability layers and layers of higher permeability (aquifers) are complicated and require site specific characterization. (ENSR, Report on Site Assessment Investigations at the Omega Recovery Facility, October 1988.)

The Montebello Forebay is an important area of ground water recharge in the Central Basin. Aquifer systems that probably exist in the Forebay near the site include (from surface to deepest) the Gaspur, Gage and Jefferson, and the Lynnwood, Silverado and Sunnyside. The relationships of these formations, thicknesses, lateral extent and permeabilities and extent of separating formation are not well characterized. (California Department of Water Resources Bulletin 104).

In June 1988, Respondent's contractor, ENSR, drilled a ground water monitoring well at the Facility. At a surface elevation of 210 feet above sea level, ground water was encountered at 75 feet below ground surface (bgs) in a silty clayey sand. The bottom of the well is at 110 feet bgs and the screen interval is from 90 to 100 feet bgs. Most of the subsurface sediments are predominantly clay with some silt, sand and gravel. The sediments all appear to be alluvial in origin with the Puente Hills being the likely source area. (ENSR, Report on Site Assessment Investigations at the Omega Recovery Facility, October 1988.)

Surface Water

The San Gabriel River flows in a southerly direction through the Whittier Narrows, which is located approximately 3 miles north of the Facility. The river flows from the San Gabriel Valley into the Coastal Plain.

Uncontained surface water drainage from the Facility would enter the storm drain system and flow through the Sorensen Avenue Drain to the North Fork of Coyote Creek flowing to Coyote Creek.

7. Documentation of Releases

Results of soil and ground water sampling show that there have been releases of hazardous wastes into the environment at or from the Facility.

Sampling Results from Soil

a. Underground storage tank - Omega removed one 500 gallon underground storage tank from the Facility in August 1987. The tank was manufactured in 1956 but allegedly not used after Fred R. Rippy purchased the Facility in 1963. The bottommost part of the tank was approximately 8 feet below ground surface ("bgs"). The tank was heavily corroded around the top and contained residual liquid and sludge in the bottom. The liquid in the tank contained several volatile and aromatic organic compounds. Trichloroethane ("TCA") was detected in the sludge. Analysis of soil samples taken near the location of the tank revealed the following volatile organic compounds:

Table I
Concentrations of Compounds Found During Removal of Underground Storage Tank

Compound	Sample E-1 10 feet below land surface (mg/kg)	Sample E-2 12 feet below land surface (mg/kg)
Total Petroleum Hydrocarbon	11	300
Benzene	ND	ND
Toluene	ND	0.4
Ethyl Benzene	ND	0.3
Total Xylenes	ND	0.4
1,1,1-Trichloroethane	ND	4.0
Tetrachloroethylene (PCE)	0.24	2.7
Methylene Chloride	ND	1.3
1,1-Dichloroethane	ND	0.12
Acetone	0.05	13.8

[ND - none detected with limits of detection ranging between 5 and 50 ug/kg as specified for each chemical in the report.]

Figure 4 of Attachment 5 shows the locations of E-1 and E-2, directly below the former location of the excavated tank. Except for total petroleum hydrocarbons, the compounds found during removal of the underground storage tank are all hazardous waste constituents as listed in Appendix VIII of 40 C.F.R. Part 261. (Leighton & Associates Closure Report, September 23, 1987.)

b. Soil borings - In March 1988, Respondent's contractor, ENSR, drilled soil borings at locations B-1, B-2, and B-3 (shown on Figure 5, Attachment 5). B-1 is located between the above ground tank farm in the southwest corner of the Facility, and a drum storage area (as the Facility was configured in 1987). B-2 is located about 25 feet north of B-1 in a drum storage area. B-3 is located about 35 feet east of B-2 in another drum storage area. Samples were collected every 5 feet bgs and were selected for analysis based on photoionization detector results and visual/olfactory evidence of contamination. Analysis of the samples detected several compounds including the following chlorinated hydrocarbons: methylene chloride,

1,1,1-trichloroethane, trichloroethylene, and tetrachloroethylene. Each of these compounds is listed as a hazardous constituent in Appendix VIII of 40 C.F.R. Part 261, as well as being listed by Respondent in the Original Part A and/or Revised Part A. In most cases, concentrations of contaminants increased with depth. (ENSR, Report on Site Assessment Investigations at the Omega Recovery Facility, October 1988.)

c. DHS Notice of Violation - On April 5, 1985, DHS issued a Notice of Violation and Directive to Comply to Respondent. The Notice of Violation cited the following violations related to potential or actual contamination:

1. Facility operator failed to date manifests properly;

2. Facility operator accumulated waste in open containers and failed to maintain closed containers; and

3. Tank storage area does not have an imperious base and the asphalt base has deteriorated.

(Notice of Violation and Directive to Comply, April 5, 1985, David M. Chase.)

In response to the April 5, 1985 Notice of Violation, Respondent contracted with LeRoy Crandall and Associates to conduct an investigation of the Facility. Analyses of soil samples taken during this investigation showed maximum contamination at the depth of one foot (at Boring No. 5, southeast of the aboveground tankfarm just within the property boundary) as follows:

methylene chloride	4.49 mg/kg
1,1,1-trichloroethane	848.00 mg/kg
trichloroethylene	358.00 mg/kg
tetrachloroethylene	2064.00 mg/kg
1,2-dichloroethane	25.00 mg/kg

Each of these chemicals is listed as a hazardous constituent in Appendix VIII of 40 C.F.R. Part 261. Contamination of the soils was caused by accidental spillage of chemicals in the tank farm and ponding of rainwater in the tank farm. (LeRoy Crandall and As-

sociates, Investigation of Subsurface Soil Contamination at Tank Farm, Omega Chemical Corporation, Whittier, California, June 26, 1985.)

Soil Vapor Survey Results

In January 1988, Respondent's contractor, ERT (a division of ENSR), conducted a soil vapor survey at the Facility to screen near-surface soils for hydrocarbons. ERT sampled 18 points and analyzed these samples for hydrocarbons in the vapors extracted from soils. Analyses of the samples detected significant levels of hydrocarbon vapors in the soil under most of the Facility, with the levels becoming progressively higher toward the southwest part of the Facility. (Figure 6 shows the location of the sampling points.) Two sampling points, S-15 and S-16, produced "very substantial relative" readings. (ENSR Soil Vapor Survey Report, February 1988.) It is unlikely that the leaking underground tank caused the high readings at S-15 and S-16 suggesting another as yet unspecified source. The source of hydrocarbon vapors can be hazardous waste constituents listed in Respondent's Original Part A and/or Revised Part A. For example, waste solvents and some pesticides are chlorinated hydrocarbons and could produce vapors such as those which were detected.

Ground Water Sampling Results

In June 1988, Respondent's contractor, ENSR, drilled a ground water monitoring well (see Figure 5), BMW-1, located near the westernmost corner of the 20,000 square foot section that constituted the original portion of the Facility. The location of the well is hydraulically downgradient of hazardous waste drum storage areas that were in existence in 1987 and hydraulically upgradient of the excavated underground tank and aboveground tank farm. Samples of ground water from BMW-1, analyzed for purgeable organics using EPA Method 624, showed the following contamination:

Table 2

Date Samples Taken	6/14/88	6/16/88	6/21/88
Compound			
Methylene Chloride	650 ug/l	260 ug/l	280 ug/l
Trichlorofluoromethane	1,540 ug/l	1,718 ug/l	ND
1,1-Dichloroethylene	1,080 ug/l	836 ug/l	510 ug/l
1,1,1-Trichloroethane	2,080 ug/l	2,150 ug/l	2,200 ug/l
Trichloroethylene	258 ug/l	160 ug/l	120 ug/l
Tetrachloroethylene	1,030 ug/l	667 ug/l	510 ug/l
1,1,2-Trichloro-1,2,2-trifluoroethane	5,240 ug/l	ND	ND
trans-1,2-Dichloroethylene	ND	9 ug/l	ND
Chloroform	ND	24 ug/l	ND
Acetone	ND	ND	160 ug/l

(All other compounds were Non-Detect (ND))

Each of these compounds is listed as a hazardous constituent in Appendix VIII of 40 C.F.R. Part 261. They are also listed in Respondent's Original Part A and Revised Part A.

Ground water contaminant concentrations exceed the most recently established health-based criteria for the following: methylene chloride, 1,1-dichloroethylene, trichloroethylene and tetrachloroethylene (as published in Appendix A in the proposed Subpart S Corrective Action Rule, 55 Fed. Reg. 30798 (July 27, 1990)). The subsurface investigation and analytical results from the soil and ground water samples suggest that the soil and ground water contamination are directly related. (ENSR, Report on Site Assessment Investigations at the Omega Recovery Facility, October 1988.)

<u>History of Poor Waste Management Practices</u>

a. On August 12, 1986, DHS issued a Notice of Violation and Schedule for Compliance to Respondent. The Notice of Violation cited the following violations related to potential or actual contamination at the Facility:

1. Drums leaking because of overfilling and deterioration of drum;

2. No aisle space between the pallets of drums that would allow for observation of leaking drums; and

3. Respondent had not followed an inspection schedule nor kept a checklist or log of inspections.

(Notice of Violation and Schedule of Compliance, August 12, 1986, Mel Knight.)

b. On December 30, 1987, DHS issued a Notice of Violation and Schedule for Compliance to Respondent. The Notice of Violation cited the following violations related to potential or actual contamination at the Facility:

1. Respondent's tank farm that stores hazardous waste did not have an impervious containment base. The containment base was corroded, and analysis of a sample taken from the base revealed contamination from a halogenated hydrocarbon compound and aromatic compounds; and

2. Respondent maintained drums that contained hazardous waste without proper labeling information.

(Notice of Violation and Schedule of Compliance, December 30, 1987.)

8. Hazardous wastes and/or hazardous constituents identified in paragraph 7 above may further migrate from the Facility into the environment in the following pathways: air; soil to ground water; ground water to drinking water; and direct contact. Direct contact is a possible pathway because the Facility's fence is only 4 feet high along the northeast property line with only a single strand of barbed wire. The west gate to the Facility is open and unguarded during the day. Many flammable and heat sensitive chemicals are stored on site. Nearby sensitive receptors are at the following locations: Skateland, a commercial skating rink adjacent to the Facility; Intercommunity Hospital within 0.5 miles west of the Facility; three elementary schools and two high schools within one mile of the Facility; and several additional elementary schools, public parks and Whittier College between one and two miles from the Facility.

9. The hazardous wastes and hazardous constituents identified in paragraph 7 above released at this facility (including but not limited to tetrachloroethylene, trichloroethylene, 1,1-dichloroethylene and methylene chloride) may pose a threat to human health and the environment by inhalation, ingestion, bioaccumulation and/or absorption of contaminated ground water and soil. The Integrated Risk Information System (IRIS) describes the health effects resulting from exposure to tetrachloroethylene, trichloroethylene and 1,1-dichloroethylene. These descriptions are included as Attachment 4.

Methylene chloride is a suspected human carcinogen (American Conference of Governmental Industrial Hygienists 1989-1990).

Tetrachloroethylene (also known as perchloroethylene, "PCE") is classified as a carcinogen. Under the assumption that there is no threshold for a carcinogen, the recommended water quality criteria for PCE is zero. Up to 1,030 ug/l of PCE were found in ground water beneath the Facility.

Trichloroethylene ("TCE") is classified as a probable human carcinogen. According to EPA's preliminary risk assessment from ambient air exposures, public health risks area significant (4.1 cancer cases per year). Recommended ambient water quality concentration of TCE should be zero. Up to 258 ug/l of TCE were detected in ground water beneath the Facility.

1,1-Dichloroethylene (DCE) is classified as a possible human carcinogen. The maximum contaminant level for drinking water is 7 ug/l (as published in Appendix B in the proposed Subpart S Corrective Action Rule, 55 Fed. Reg. 30798 (July 27, 1990)). Up to 1,080 ug/l of DCE were detected in ground water beneath the Facility.

Chloroform is a suspected human carcinogen. Up to 24 ug/l of chloroform were found in ground water below the Facility.

1,1,1-Trichloroethane (methyl chloroform) has a maximum contaminant level of 200 ug/l (as published in Appendix B in the proposed Subpart S Corrective Action Rule, 55 Fed. Reg. 30798 (July 27, 1990)). Up to 2,080 ug/l were found in ground water beneath the Facility.

10. The Facility is located in a part of Whittier, California that consists of residential, commercial and industrial land uses. There are three elementary schools and two high schools within one mile of the Facility. Intercommunity Hospital is lo-

cated within one half mile west of the Facility. There are several additional elementary schools, public parks, and Whittier College located between one and two miles from the Facility.

Deeper aquifers in this vicinity are used for drinking water. The upper and lower aquifers may be hydraulically connected (California Department of Water Resources Bulletin 104). There are two major geologic formations in the area of the Facility: the Lakewood Formation and the San Pedro Formation. The upper Lakewood Formation, which is comprised of stream and flood plain deposits, contains the Gage Aquifer. The Lakewood Formation unconformably overlies the San Pedro Formation which contains the Hollydale, Jefferson, Silverado and Sunnyside Aquifers.

The City of Santa Fe Springs operates three wells within three miles of the Facility. Drinking water Well #1 (State #2S/11W-30R03) at Dice Road and Burke Street is just beyond one mile downgradient (southwest) of the Facility. Although the quality of this well is generally good, the City detected 2.8 parts per million of trichloroethylene (TCE) in this well in October 1989. This well is screened into the Silverado and Sunnyside Aquifers. Well #304 is also located southwest of the Facility alongside the San Gabriel River at the point where Los Nietos Road would intersect the river if it extended that far. This well is screened into the Silverado Aquifer. Well #4 is a standby well, available for emergency purposes, such as fire, and is located at Telegraph Road, east of Pioneer, near the railroad tracks, also southwest of the Facility. The water from each of the wells operated by the City of Santa Fe Springs leads into a main distribution system. The population served by the system is unknown because this area is about 90% commercial and industrial. The population is estimated to be about 100,000 during the day and about 10,000 at night.

There are several wells of unknown status (possibly active) within a one mile (or just beyond one mile) radius of the Facility. They have the following state numbers:

2S/11W-29 E02, E03, and E04.
2S/11W-29 L02, L03, L04, L05 and L06
2S/11W-29 M01 (shows activity in 1958)
2S/11W-29 N01
2S/11W-32 G01

The 29 L and N series wells are all directly southwest of the Facility, in the probable direction of ground water flow.

In the Part B, Respondent states that well number 2S/11W-29 E05 is the only well within one mile of the Facility with water data generated in the last 10 years. This well was used for irrigation by the Apex Bulk Commodities Association of Los Angeles. Currently, it is not being used.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set out above, and after consideration of the administrative record the Director has made the following conclusions of law and determinations:

1. Respondent is a "person" within the meaning of § 1004(15) of RCRA, 42 U.S.C. §6903(15);

2. Respondent is the owner and operator of a facility that has operated or is operating subject to §3005(e) of RCRA, 42 U.S.C. §6925(e).

3. Certain wastes and constituents thereof found at the Facility are hazardous wastes or hazardous constituents thereof as defined by §1004(5) of RCRA, 42 U.S.C. §6903(5). These are also hazardous wastes or hazardous constituents within the meaning of §3001 of RCRA, 42 U.S.C. §6921 and 40 C.F.R. Part 261.

4. There is or has been a release of hazardous wastes and/or hazardous constituents into the environment from Respondent's Facility.

5. The actions required by this Consent Order are necessary to protect human health or the environment.

VI. WORK TO BE PERFORMED

Pursuant to §3008(h) of RCRA, 42 U.S.C. §6928(h), Respondent agrees and is hereby ordered to perform the following acts in the manner and by the dates specified herein. All work undertaken pursuant to this Consent Order shall be performed in a manner consistent with, at a minimum: the attached Scopes of Work; the EPA-approved Interim Measures Workplan, RCRA Facility Investigation Workplan, and all other Workplans; RCRA and its implementing regulations; and relevant EPA guidance documents. Relevant guidance may include, but is not limited to: the "RCRA §3008(h) Corrective Action Interim Measures Guidance Document" (OSWER Directive 9902.4, January 10, 1987), the "RCRA Facility Investigation (RFI) Guidance" (EPA 530/SW-87-001), "RCRA Ground-water

Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1, September 1986), and "Test Methods For Evaluating Solid Waste" (SW-846, November 1986).

INTERIM MEASURES (IM)

1. The Respondent shall perform the Interim Measures in a manner consistent with the IM Scope of Work and schedule contained in Attachment 1 to this Consent Order, which is incorporated by reference as if fully set forth herein. The Interim Measures to be undertaken by the Respondent at the facility shall improve:

a. security at the facility by constructing a higher fence and assuring no open, unguarded gates.

b. source control by immediately inspecting all potential sources of contamination such as leaking drums and inadequately stacked drums. Any leaking drums with hazardous waste should be repacked and immediately removed to the appropriate Class I facility.

The Interim Measures shall be implemented in accordance with, at a minimum, RCRA, its implementing regulations, and relevant EPA guidance documents. Relevant guidance may include, but is not limited to: "RCRA 3008(h) Corrective Action Interim Measures Guidance Document" (OSWER Directive 9902.4, January 10, 1987).

2. Within thirty (30) days of the effective date of this Consent Order, Respondent shall submit to EPA an IM Workplan for the implementation of Interim Measures ["IM Workplan"]. The IM Workplan is subject to approval by EPA and shall be performed in a manner consistent with the IM Scope of Work in Attachment I to this Consent Order, which is incorporated as if fully set forth herein. The IM Workplan shall be developed in accordance with, at a minimum, RCRA, its implementing regulations, and relevant EPA guidance documents. Relevant guidance may include, but is not limited to: "RCRA 3008(h) Corrective Action Interim Measures Guidance Document" (OSWER Directive 9902.4, January 10, 1987).

3. The IM Workplan shall ensure that the Interim Measures are designed to mitigate a current or potential threat(s) to human health or the environment and are consistent with and integrated into any long term solution at the facility. The IM Workplan shall document the procedures to be used by the Respondent for the implementation of Interim Measures and shall in-

clude, but not be limited to: the objectives of the Interim Measures; design, construction, operation, monitoring and maintenance requirements; and detailed schedules.

4. In accordance with Attachment 1, the IM Workplan shall include: Interim Measures Objectives; Design Plans and Specifications; an Operation and Maintenance Plan; a Project Schedule; and Reporting Requirements.

5. Within 14 days of EPA approval of the IM Workplan, Respondent shall commence implementing interim measures.

6. In the event the Respondent identifies a current or potential threat to human health or the environment, at any time during activities conducted pursuant to this order, the Respondent shall immediately notify EPA orally and in writing within seven (7) days, summarizing the immediacy and magnitude of the potential threat to human health or the environment. Within fourteen (14) days of notifying EPA, the Respondent shall submit to EPA an IM Workplan for approval that identifies Interim Measures which mitigate this threat and are consistent with and integrated into any long term plans to remedy the release of hazardous waste and hazardous constituents at the Facility.

RCRA FACILITY INVESTIGATION (RFI)

7. Within sixty (60) days of the effective date of this Consent Order, Respondent shall submit to EPA a report summarizing the current conditions at the Facility. This report shall be performed in a manner consistent with the requirements of Task I of the RFI Scope of Work contained in Attachment 2. Attachment 2 to this Consent Order is incorporated by reference as if fully set forth herein.

8. Within ninety (90) days of the effective date of this Consent Order, Respondent shall submit to EPA an RFI Workplan for a RCRA Facility Investigation ["RFI Workplan"]. The RFI Workplan is subject to approval by EPA and shall be performed in a manner consistent with the RFI Scope of Work contained in Attachment 2. The RFI Workplan shall be developed in accordance with, at a minimum, RCRA, its implementing regulations, and relevant EPA guidance documents.

9. The RFI Workplan shall be designed to define the presence, magnitude, extent, direction, and rate of movement of any hazardous wastes or hazardous constituents within and beyond the Facility boundary. The RFI Workplan shall document the procedures Respondent shall use to conduct those investigations necessary to: (1) characterize the potential pathways of contaminant migration; (2) characterize the source(s) of contamination; (3) define the degree and extent of contamination; (4) identify actual or potential receptors; and (5) support the development of alternatives from which a corrective measure will be selected by EPA. A specific schedule for implementation of all activities shall be included in the RFI Workplan.

10. In accordance with the provisions of Attachment 2, the RFI Workplan shall include: (1) a Project Management Plan; (2) a Data Collection Quality Assurance Plan; (3) a Data Management Plan; (4) a Health and Safety Plan; and (5) Community Relations Plan.

11. EPA shall review the RFI Workplan and inform Respondent in writing of its approval, disapproval or modification of the RFI Workplan or any part thereof. In the event of any disapproval, EPA shall specify in writing the deficiencies and reasons for such disapproval. Within (30) days of the receipt of EPA's disapproval Respondent shall amend and submit revised RFI workplan. EPA may approve or modify the revised RFI Workplan. The EPA approved or modified RFI Workplan shall be deemed incorporated into and part of this Consent Order.

12. Within Fourteen (14) days of approval or modification by EPA of the RFI Workplan, Respondent shall commence work and implement the tasks required by the RFI Workplan, in accordance with the requirements, specifications and schedules stated in the RFI Workplan as approved and modified by EPA.

13. Respondent shall provide preliminary and final RFI Reports to EPA in accordance with the schedule contained in the approved RFI Workplan. A Summary RFI Report shall be submitted with the RFI Report, subject to EPA approval, for later distribution to the Facility's mailing list.

SUBMISSIONS/AGENCY APPROVAL/ADDITIONAL WORK

14. EPA will review all reports or workplans, and notify Respondent in writing of EPA's approval/disapproval or modification of the Workplan, report or any part thereof. All workplans or reports are considered draft until EPA's approval at which time they are considered final. In the event of any disapproval, EPA shall specify in writing the deficiencies and reasons for such disapproval. Within thirty (30) days of the receipt of EPA's disapproval of any Workplan, or report, Respondent shall amend and submit a revised Workplan, Program Plan, or report. EPA approved Workplans, Program Plans, and reports shall be deemed incorporated into and part of this Consent Order.

15. Within fourteen (14) days of approval or modification by EPA of any Workplan, Respondent shall commence work and implement the tasks required by the Workplan or Program Plan submitted pursuant to the Scopes of Work contained in Attachments 1-3, in accordance with the standards, specifications and schedule stated in the Workplan or Program Plan as approved or modified by EPA.

16. Beginning with the month following the effective date of this Consent Order, Respondent shall provide EPA with progress reports every other month on the tenth day of the following month. The progress reports shall conform to requirements in the relevant Scopes of Work contained in Attachments 1-3.

17. Respondent shall provide Interim Measures, RCRA Facility Investigation, RCRA Facility Investigation Summary Report to EPA in accordance with the schedule contained in this Consent Order and its attachments.

18. Two (2) copies of all documents, including Workplan(s), and reports, progress reports, and other correspondence to be submitted pursuant to this Consent Order shall be hand delivered or sent by certified mail, return receipt requested, or by overnight express mail to the Project Coordinator designated pursuant to Section XII of this Consent Order.

19. All work performed pursuant to this Consent Order shall be under the direction and supervision of a professional engineer or geologist with expertise in hazardous waste site cleanup. Within 60 days after the effective date of this Consent Order, Respondent shall notify EPA in writing of the name, title, and qualifications of the engineer or geologist, and of any contractors or subcontractors and their personnel to be used in carrying out the terms of this Consent Order.

20. EPA may determine that certain tasks, including investigatory work or engineering evaluation, or procedure/methodology modifications, are necessary in addition to the tasks and deliverables included in the IM Workplan, the RFI Workplan, when new findings indicate that such additional work is necessary. EPA shall request in writing that Respondent perform the additional work in this situation and shall specify the basis and reasons for EPA's determination that the additional work is necessary. Within fourteen (14) days after the receipt of such request, Respondent shall have the opportunity to meet with EPA to discuss the additional work EPA has requested. Thereafter, Respondent shall perform the additional work EPA has requested according to an EPA approved Workplan. All additional work performed by Respondent under this paragraph shall be performed in a manner consistent with this Consent Order.

VII. QUALITY ASSURANCE

Throughout all sample collections and analysis activities, Respondent shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures as specified in the approved Workplans and Project Plan. In addition, Respondent shall:

1. Ensure that laboratories used by Respondent for analyses perform such analyses according to the EPA methods included in "Test Methods for Evaluating Solid Waste (SW-846, November 1986) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall submit all protocols to be used for analyses to EPA for approval within thirty (30) days prior to the commencement of analyses.

2. Ensure that laboratories used by Respondent for analyses participate in a quality assurance/quality control program equivalent to that which is followed by EPA. As part of such a program, and upon request by EPA, such laboratories shall perform analyses of samples provided by EPA to demonstrate the quality of the analytical data.

VIII. PUBLIC COMMENT AND PARTICIPATION

1. An approved Summary Report of the RCRA Facility Investigation Report shall be mailed by the Respondent to all individuals on the Facility's mailing list. That list shall include all agencies regulating the Facility and businesses or individual members of the public who express an interest in corrective action at the Facility.

IX. ON-SITE AND OFF-SITE ACCESS

1. EPA and/or any EPA representative are authorized to enter and freely move about all property at the Facility during the effective dates of this Consent Order for the purposes of, inter alia: interviewing Facility personnel and contractors; inspecting records, operating logs, and contracts related to the Facility; reviewing the progress of Respondent in carrying out the terms of this Consent Order; conducting such tests, sampling or monitoring as EPA or its Project Coordinator deem necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to EPA by Respondent. Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Consent Order. Respondent shall comply with all EPA-approved health and safety plans.

2. To the extent that work required by this Consent Order, or by any approved Program Plans, or Workplans prepared pursuant hereto, must be done on property not owned or controlled by Respondent, Respondent shall use its best efforts to obtain site access agreements from the present owner(s) of such property within thirty (30) days of approval of any Workplan or Program Plan for which site access is required. Best efforts as used in this paragraph shall include, at a minimum, a certified letter from Respondent to the present owners of such property requesting access agreements to permit Respondent and EPA and its authorized representatives to access such property. Any such access agreement shall be incorporated by reference into this Consent Order. In the event that agreements for access are not obtained within sixty (60) days of the date of approval by EPA of appropriate Work Plans or Program Plans requiring such access, Respondent shall notify EPA in writing within seven (7) days thereafter regarding both the efforts undertaken to obtain access and its failure to obtain such agreements.

3. Nothing in this section limits or otherwise affects EPA's right of access and entry pursuant to applicable law, including RCRA and CERCLA.

X. SAMPLING AND DATA/DOCUMENT AVAILABILITY

1. Respondent shall submit to EPA the results of all sampling and/or tests and all other information generated by, or on behalf of Respondent, in accordance with the requirements of this Consent Order and its attachments.

2. Respondent shall notify EPA in writing at least fourteen (14) days before engaging in any field activities, such as well drilling, installation of equipment, or sampling. At the request of EPA, Respondent shall provide or allow EPA or its authorized representative to take split samples of all samples collected by Respondent pursuant to this Consent Order. Similarly, at the request of Respondent, EPA shall allow Respondent or its authorized representatives to take split or duplicate samples of all samples collected by EPA under this Consent Order.

3. Respondent may assert a business confidentiality claim covering all or part of any information submitted to EPA pursuant to this Consent Order. Any assertion of confidentiality shall be adequately substantiated by Respondent when the assertion is made. Information determined to be confidential by EPA shall be disclosed only to the extent permitted by 40 C.F.R. Part 2. If no such confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Respondent. Respondent agrees not to assert any confidentiality claim with regard to any physical or analytical data.

XI. RECORD PRESERVATION

Respondent agrees that it shall preserve, during the pendency of this Consent Order and for a minimum of ten (10) years after its termination, all data, records and documents in its possession or in the possession of its divisions, officers, directors, employees, agents, contractors, successors and assigns which relate in any way to this Consent Order or to hazardous waste management and/or disposal at the Facility. After ten (10) years, Respondent shall make such records available to EPA for inspection or shall provide copies of any such records to EPA. Respondent shall notify EPA thirty (30) days prior to the destruction of any such records, and shall provide EPA with the opportunity to take possession of any such records.

XII. PROJECT COORDINATOR

1. Within fourteen (14) days of the effective date of this Consent Order, EPA and Respondent shall each designate a Project Coordinator. Respondent shall notify EPA in writing of the Project Coordinator it has selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Consent Order. The EPA Project Coordinator will be EPA's desig-

nated representative at the Facility. All communications between Respondent and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, shall be directed through the Project Coordinators.

2. The parties agree to provide at least seven (7) days written notice prior to changing Project Coordinators.

3. If EPA determines that activities in compliance or noncompliance with this Consent Order, have caused or may cause a release of hazardous waste, hazardous constituents, or a pollutant or contaminant, or a threat to the public health or to the environment, EPA may order Respondent to stop further implementation of this Consent Order for such period of time as may be needed to abate any such release or threat and/or to undertake any action which EPA determines is necessary to abate such release or threat.

4. The absence of the EPA Project Coordinator from the Facility shall not be cause for the stoppage of work.

5. The EPA Project coordinator is Nancy Nadel, RCRA Corrective Action Section (H-4-4), Region IX Hazardous Waste Management Division.

XIII. NOTIFICATION

Unless otherwise specified, all reports, correspondence, approvals, disapprovals, notices or other submissions relating to or required under this Consent Order shall be in writing and shall be sent, until written notice otherwise, to:

1. Two copies of all documents to be submitted to the U.S. EPA should be sent to:

Nancy J. Nadel
H-4-4
US EPA, Region IX
75 Hawthorne Street
San Francisco CA 94105

2. Documents to be submitted to the Respondent should be sent to:

Dennis O'Meara, President
Omega Chemical Corporation
12504 East Whittier Blvd.
Whittier CA 90602

XIV. DELAY IN PERFORMANCE/STIPULATED PENALTIES

1. Unless there has been a written modification of a compliance date by EPA, or excusable delay as defined under the "Force Majeure and Excusable Delay" provision (Section XVI), in the event Respondent fails to meet any requirement set forth in this Consent Order, Respondent shall pay stipulated penalties as set forth below. Compliance by Respondent shall include completion of an activity under this Consent Order or a plan approved under this Consent Order or any matter under this Consent Order in an acceptable manner and within the specified time schedules in and approved under this Consent Order.

a. For failure to commence and to perform work as prescribed in this Consent Order: $3,000 per day for one to seven days of delay, and $10,000 per day for each day of delay, thereafter;

b. For failure to submit at the time required pursuant to this Consent Order any workplans, preliminary reports, or final reports: $3,000 per day for the first one to seven days of delay, and $10,000 per day for each day of delay, thereafter;

c. For failure to submit progress reports at the time required pursuant to this Consent Order: $3,000 per day for the first one to seven days of delay, and $10,000 per day for each day of delay, thereafter;

d. For failure to submit other deliverables at the time required pursuant to this Consent Order: $2,500 per day for the first one to seven days of delay, and $5,000 per day for each day of delay, thereafter;

e. For other failure to comply with provisions of this Consent Order after notice by EPA of non-compliance: $2,500 per day for the first one to seven days of delay, and $5,000 per day for each day of delay, thereafter;

2. All penalties shall begin to accrue on the date that complete performance is due or a violation occurs, and shall continue to accrue through the final day of correction of the non-compliance. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Order.

3. All penalties owed to EPA under this Section shall be due within thirty (30) days of receipt of a notification of non-compliance. Such notification shall describe the noncompliance and shall indicate the amount of penalties due. Interest shall begin to accrue on the unpaid balance at the end of the thirty-day period.

4. All penalties shall be made payable by certified or cashier's check to the Treasurer of the United States of America and shall be remitted to:

U. S. Environmental Protection Agency
Region 9 Hearing Clerk
P. O. Box 360863M
Pittsburg, Pennsylvania 15251

All payments shall reference the name of the Facility, the Respondent's name and address, and the EPA docket number of this action. Copies of the transmittal of payment shall be sent simultaneously to the EPA Project Coordinator.

5. Respondent may dispute EPA's right to the stated amount of penalties by invoking the dispute resolution procedures under Section XV of this Consent Order. If Respondent does not prevail upon resolution of the dispute, EPA has the right to collect all penalties which accrued prior to and during the period of dispute. If Respondent prevails upon resolution of the dispute, no penalties shall be payable.

6. Neither the filing of a petition to resolve a dispute nor the payment of penalties shall alter in any way Respondent's obligation to complete the performance required hereunder.

7. The stipulated penalties set forth in this Section do not preclude EPA from pursuing any other remedies or sanctions which may be available to EPA by reason of Respondent's failure to comply with any of the requirements of this Consent Order.

XV. DISPUTE RESOLUTION

1. If Respondent disagrees, in whole or in part, with any EPA disapproval or modification or other decision or directive made by EPA pursuant to this Consent Order, Respondent shall notify EPA in writing of its objections and the basis therefore within fourteen (14) calendar days of receipt of EPA's disapproval, decision or directive. Said notice shall set forth the specific points of the dispute, the position Respondent is main-

taining should be adopted as consistent with the requirements of this Consent Order, the basis for Respondent's position, and any matters which it considers necessary for EPA's determination. Within fourteen (14) calendar days of EPA's receipt of such written notice, EPA shall provide to Respondent its decision on the pending dispute which shall be binding upon both parties to this Consent Order.

2. The existence of a dispute as defined herein, and EPA's consideration of such matters as placed into dispute shall not excuse, toll or suspend any compliance obligation or deadline required pursuant to this Consent Order during the pendency of the dispute resolution process.

3. Notwithstanding any other provisions of this Consent Order, no action or decision by EPA, including without limitation decisions of the Director, pursuant to this Consent Order shall constitute final agency action giving rise to any rights to judicial review prior to EPA's initiation of judicial action to compel Respondent's compliance with the mandate(s) of this Consent Order.

XVI. FORCE MAJEURE AND EXCUSABLE DELAY

1. Respondent shall perform the requirements of this Consent Order within the time limits set forth herein, unless the performance is prevented or delayed by events which constitute a force majeure. Respondent shall have the burden of proving such a force majeure. A force majeure is defined as any event arising from causes not foreseeable and beyond the control of Respondent including but not limited to Respondent's contractors and subcontractors, which delays or prevents the timely performance of any obligation under this Consent Order despite Respondent's best efforts to fulfill the obligation. Respondent's "best efforts to fulfill the obligation" shall include, but not be limited to, best efforts to anticipate any potential force majeure event and address it before, during and after its occurrence, such that any performance delay or prevention is minimized as much as possible. "Force majeure" does not include, among other things, financial inability to complete the work, increased costs or expenses of performance, changed economic circumstances, normal precipitation events, or failure to obtain federal, state or local permits.

2. Respondent must notify EPA both by telephone within forty-eight (48) hours and in writing within ten (10) days after the respondent becomes aware of, or in the exercise of due diligence should have become aware of, a potential or existing

force majeure. Respondent's telephone notification must be received within forty-eight (48) hours by the EPA Project Coordinator or, if the Project Coordinator is unavailable, the Project Coordinator's Section Chief in the EPA Region IX, Hazardous Waste Management Division.

3. Respondent's written notification, certified by an accountable representative of Respondent, must be received within ten (10) days by the EPA Project Coordinator. The written notification shall detail: (1) the causes, nature, and expected duration of the force majeure, (2) an implementation schedule for all actions taken or to be taken to minimize as much as possible any resulting performance delay or prevention, (3) the expected duration of any performance delay or prevention resulting from the force majeure, and (4) Respondent's opinion as to whether the force majeure may cause or contribute to any endangerment to public health, welfare, or the environment. Respondent shall include with its written notification all available documentation supporting its claim of force majeure.

4. Respondent's failure to comply with any provision of this Section as to a force majeure, including any telephone or written notification provision, shall constitute a waiver of and preclude Respondent from asserting any claim as to that force majeure. Respondent shall be deemed to have notice of any event which it or any person or entity controlled by it, including but not limited to Respondent's contractors and subcontractors, is or, in the exercise of due diligence, should be aware.

5. Respondent has the burden of proving any force majeure. If EPA determines that a force majeure delaying or preventing timely performance of any obligation did or will occur despite Respondent's best efforts to fulfill the obligation, EPA will extend the time for performance of the obligation for a period of time equal to any delay caused by the force majeure. Any EPA force majeure extension must be in writing to be effective. Any force majeure extension is limited to the performance of obligations expressly detailed in the extension and shall not, in itself, extend the time for performance of any subsequent or other obligation.

6. If EPA denies Respondent's force majeure claim or EPA grants a shorter extension than the delay claimed by Respondent, Respondent may invoke the dispute resolution procedures set forth in the Section XV, Dispute Resolution, within fourteen (14) days of receipt of EPA's written determination. Respondent may not invoke the dispute resolution procedures after fourteen (14) days from receipt of EPA's written determination.

7. In any dispute resolution proceeding on a force majeure claim, Respondent shall have the burden of proving by a preponderance of evidence that: (1) the claimed force majeure delaying or preventing timely performance of an obligation did or will occur despite Respondent's best efforts to fulfill the obligation, (2) Respondent's expected duration of any performance delay or prevention resulting from that force majeure is the most probable, and (3) Respondent complied with each and every provision of this Section in Claiming that force majeure. If Respondent carries this burden, EPA will grant a force majeure extension for the duration proven by Respondent.

XVII. RESERVATION OF RIGHTS

1. EPA expressly reserves all rights and defenses that it may have, including the right both to disapprove of work performed by Respondent pursuant to this Consent Order and to request that Respondent perform tasks in addition to those stated in the Work Plan.

2. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights, remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any of the requirements of this Consent Order, including without limitation the assessment of penalties under § 3008(h)(2) of RCRA, 42 U.S.C. §6928(h)(2). This Consent Order shall not be construed as a covenant not to sue, release, waiver or limitation of any rights, remedies, powers and/ or authorities, civil or criminal, which EPA has under RCRA, CERCLA, or any other statutory, regulatory or common law enforcement authority of the United States.

3. Compliance by Respondent with the terms of this Consent Order shall not relieve Respondent of its obligations to comply with RCRA or any other applicable local, State or federal laws and regulations.

4. The entry of this Consent Order and Respondent's consent to comply shall not limit or otherwise preclude EPA from taking additional enforcement action pursuant to § 3008(h) should EPA determine that such actions are warranted.

5. This Consent Order is not intended to be nor shall it be construed as a permit. This Consent Order does not relieve Respondent of any obligation to obtain and comply with any local, State or federal permits.

6. EPA reserves the right to perform any portion of the work consented to herein or any additional site characterization, feasibility study, and response/corrective actions as it deems necessary to protect public health and the environment. EPA may exercise its authority under CERCLA to undertake removal actions or remedial actions at any time. In any event, EPA reserves its right to seek reimbursement from Respondent for such additional costs incurred by the United States. Notwithstanding compliance with the terms of this Consent Order, Respondent is not released from liability, if any, for the costs of any response actions taken by EPA.

XVIII. OTHER CLAIMS

Nothing in this Consent Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Facility.

XIX. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Consent Order shall be undertaken in accordance with the requirements of all applicable local, State, and federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

XX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

Respondent agrees to indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent or its agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Consent Order. This indemnification shall not be construed in any way as affecting or limiting the rights or obligations of Respondent or the United States under their various contracts.

XXI. FINANCIAL RESPONSIBILITY

1. Until such time that the Respondent can establish a financial assurance mechanism, the Respondent shall submit, on a monthly basis, copies of each monthly cash activity analysis report (Interim Statement UST-3) required by the Bankruptcy Court. Should the financial health of the Facility improve such that the Facility can establish a financial assurance mechanism to ensure that all of the actions described in the RFI Workplan, are successfully completed, the Facility shall do so. The financial assurance mechanisms may include a performance or surety bond, liability insurance, an escrow performance guarantee account, a trust fund, financial test or corporate guarantee as described in 40 C.F.R. § 265.143 or any other mechanism acceptable to the EPA. The mechanism shall be established to allow EPA access to the funds to undertake the RFI Workplan tasks if the respondent is unable or unwilling to undertake the required actions.

2. The financial mechanism will be discussed in detail in each of the Workplans, will be sufficient to fund all Workplan activities, and will be scheduled for implementation in each of the Workplans.

XXII. SUBSEQUENT MODIFICATION

1. This Consent Order may only be amended by mutual agreement of EPA and Respondent. Such amendments shall be in writing, shall be signed by both parties, shall have as their effective date the date on which they are signed by EPA, and shall be incorporated into this Consent Order.

2. Any reports, plans, specifications, schedules, and attachments required by this Consent Order are, upon written approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of this Consent Order and shall subject Respondent to the stipulated penalty provisions included in Section XIV of this Consent Order.

3. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Respondent will be construed as relieving Respondent of its obligation to obtain written approval, if and when required by this Consent Order.

4. Any other provision of this Consent Order notwithstanding, if EPA and Respondent agree, EPA may modify any schedule, methodology or specification contained in an EPA-approved workplan or report. Respondent shall request any such modification in writing. For any proposed schedule changes, EPA must receive Respondent's modification request at least fourteen (14) days prior to the existing due date. Any such modification will be effective only upon EPA's issuance of written approval of the modification. Any such modifications made in this manner shall be incorporated into this Consent Order.

XXIII. SEVERABILITY

If any provision or authority of this Consent Order or the application of this Consent Order to any party or circumstances is held by any judicial or administrative authority to be invalid, the application of such provisions to other parties or circumstances and the remainder of the Consent Order shall remain in force and shall not be affected thereby.

XXIV. TERMINATION AND SATISFACTION

The provisions of this Consent Order shall be deemed satisfied upon Respondent's execution and EPA's receipt of an "Acknowledgment of Termination And Agreement to Record Preservation and Reservation of Rights ("Acknowledgment"). EPA will prepare the Acknowledgment for Respondent's signature. The Acknowledgment will specify that Respondent has demonstrated to the satisfaction of EPA that the terms of this Consent Order, including any additional tasks determined by EPA to be required pursuant to this Consent Order, have been satisfactorily completed. In addition, the Acknowledgment will ensure that all records will be preserved in accordance with the Record Preservation Section (Section XI) and Reservation of Rights Section (Section XVII) of this Consent Order after the Consent Order is terminated.

XXV. SURVIVABILITY/PERMIT INTEGRATION

1. Subsequent to the issuance of this Consent Order, a RCRA permit may be issued to the facility incorporating the requirements of this Consent Order by reference into the permit.

2. Any requirements of this Consent Order shall not terminate upon the issuance of a RCRA permit unless the requirements are expressly replaced by at least as stringent requirements in the permit.

XXVI. DISCOVERY OF ADDITIONAL SOLID WASTE MANAGEMENT UNITS

Respondent shall notify EPA in writing of any newly identified solid waste management units and/or releases (not previously identified in this Order) discovered during the course of any investigation work required by this Order no later than fourteen (14) calendar days after the discovery. The notification shall include a description of the newly identified solid waste management unit(s) and/or release(s).

XXVII. SUBMITTAL SUMMARY

The following is a summary of significant deadlines required by this Consent Order. To the extent this Part is inconsistent with any other Part of the Consent Order, this Part shall not control.

Action	Due Date
Designate Project Coordinators (section XII.1.)	14 calendar days from effective date of Consent Order
Notify EPA in Writing of contractors to carry out terms of Consent Order (Section VI.26.)	within 60 after effective date of Consent Order
Submit first monthly progress report (section VI.19.)	tenth day of the month following the effective date of Consent Order
Monthly Progress Reports	for each month on the tenth day of the following month
Submit Current Conditions Report (Section VI.7.)	60 calendar days from effective date of the Consent Order
Submit RFI Workplan, and pre-investigation evaluation report (Section VI.8.)	90 calendar days from effective date of the Consent Order
Implement RFI Workplan (Section VI.12.)	14 calendar days from EPA EPA written approval of RFI workplan

Notify EPA (Section X.2.)	14 calendar days before field activities are scheduled

XXVIII. EFFECTIVE DATE

The effective date of this Consent Order shall be the date on which it is signed by EPA. Because this Consent Order was entered with the consent of both parties, Respondent waives its right to request a public hearing pursuant to § 3008(b) of RCRA, 42 U.S.C. § 6928(b).

IT IS SO AGREED AND ORDERED:

OMEGA CHEMICAL CORPORATION

DATE: Oct 3 1991 BY: _____

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION IX

DATE: 10/17/91 BY: _____
Jeffrey Zelikson, Director
Hazardous Waste Management Division

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Attachment 1

SCOPE OF WORK FOR INTERIM MEASURES
AT
OMEGA CHEMICAL CORPORATION

PURPOSE
The purpose of Interim Measures is to prevent imminent threats from being realized while a long-term comprehensive response is being developed. Interim measures may encompass a broad range of possible actions including control of the source of a release, control of the contaminated medium or other exposure controls.

SCOPE
Interim Measures consists of two tasks:

Task I: Interim Measures Workplan

Task II: Implementation of Interim Measures

TASK I: INTERIM MEASURES WORKPLAN
Respondent's workplan shall describe interim measures which will be undertaken at the Facility. This shall include:

A. Objectives of the interim measures: how the measure will mitigate a potential threat to human health and the environment and/or is consistent with and integrated into any long term solution at the Facility;
B. Design, construction, operation, and maintenance requirements;
C. Schedules for design, construction and monitoring; and
D. Schedule for progress reports.

TASK II: Implementation of Interim Measures

A. Within 15 days of approval of an Interim Measures Workplan, examine every container to detect any deterioration or leakage. Overpack or redrum each leaking and each substantially deteriorated container that may leak to prevent further leakage. Note the location of each leaking drum and notify EPA immediately. If immediate removal of contaminated soil is not deemed necessary until further investigation as part of the RFI, develop temporary measures such as fencing or covering to prevent direct contact.

B. Within 15 days of the approval of an Interim Measures Workplan, install security fencing and locked or guarded gates to limit access to the site.

ATTACHMENT 2

SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION (RFI)

PURPOSE

The purpose of this RCRA Facility Investigation is to determine the nature and extent of releases of hazardous waste or constituents from regulated units, solid waste management units, and other source areas at the Facility and to gather all necessary data to support the Corrective Measures Study. The RFI must include characterization of the Facility (processes, waste management, etc), environmental setting, source areas, nature and extent of contamination, migration pathways (transport mechanisms) and all potential receptors.

SCOPE

A Current Conditions Report, Corrective Measures Screening and Evaluation Report and a RCRA Facility Investigation Workplan are, unless EPA specifies otherwise, required elements of the RCRA Facility Investigation. The scope of work for each document is described below.

A. Current Conditions Report

The Current Conditions Report must describe existing information pertinent to the Facility including operations, processes, waste management, geology, hydrogeology, contamination, migration pathways, potential receptor populations and interim corrective measures. The required format for a current conditions report is described below. If some of this information does not exist, so indicate in the applicable section.

1. Introduction

1.1 Purpose

Describe the purpose of the current conditions report (e.g. summary and evaluation of existing information related to the facility; required as a component of the RCRA Facility Investigation)

1.2 Organization of Report

Describe how the report is organized.

2. Facility Description

Summarize background, current operations, waste management and products produced at the Facility. Include a map that shows the general geographic location of the Facility.

Describe current Facility structures including any buildings, tanks, sumps, wells, waste management areas, landfills, ponds, process areas and storage areas.

Include detailed Facility maps that clearly show current property lines, the owners of all adjacent property, surrounding land use (residential, commercial, agricultural, recreational, etc.), all tanks, buildings, process areas, utilities, paved areas, easements, rights-of-way, waste management areas, ponds, landfills, piles, underground tanks, wells and other Facility features.

3. Facility History

3.1 Ownership History

Describe the ownership history of the Facility.

3.2 Operational History

Describe in detail how facility operations, processes and products have changed over time.

3.3 Regulatory History

Describe all permits (including waste discharge requirements, if located in California) requested or received, any enforcement actions taken by regulatory agencies and any closure activities that are planned or underway.

3.4 Waste Generation

Describe all wastes (solid or hazardous) that have been generated at the Facility. Include approximate waste volumes generated and summaries of any waste analysis data. Show how the waste stream (volume and chemical composition) has changed over time.

3.5 Waste Management

Describe in detail all past solid and hazardous waste treatment, storage and disposal activities at the Facility. Show how these activities have changed over time and indicate the current status. Make a clear distinction between active waste management units and older out of service waste management units. Identify which waste management units are regulated under RCRA.

Include maps showing: (1) all solid or hazardous waste treatment, storage or disposal areas active after November 19, 1980, (2) all known past solid waste or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980 and (3) all known past or present underground tanks or piping.

3.6 Spill and Discharge History

Provide approximate dates or periods of past product and waste spills, identify the materials spilled and describe any response actions conducted. Include a summary of any sampling data generated as a result of the spill. Include a map showing approximate locations of spill areas at the Facility.

3.7 Chronology of Critical Events

Provide a chronological list (including a brief description) of major events, communications, agreements, notices of violation, spills, discharges that occurred throughout the Facility's history.

4. Environmental Setting

4.1 Location/Land Use

Discuss facility size, location and adjacent land use. Include a rough demographic profile of the human population who use or have access to the facility and adjacent lands. Provide approximate distance to nearest residential areas, schools, nursing homes, hospitals, parks, playgrounds, etc.

4.2 Local Ecology

Describe any endangered or threatened species near the Facility. Include a description of the ecological setting on and adjacent to the facility.

Provide approximate distance to nearest environmentally sensitive areas such as marsh lands, wetlands, streams, oceans, forests, etc.

4.3 Topography and Surface Drainage

Describe the regional and site specific topography and surface drainage patterns that exist at the Facility.

Include a map that shows the topography and surface drainage depicting all waterways, wetlands, floodplains, water features, drainage patterns and surface water containment areas.

4.4 Climate

Discuss mean annual temperatures, temperature extremes, 24-hour rainfall, average annual rainfall, prevailing wind direction, etc.

4.5 Surface Water Hydrology

Describe the Facility's proximity (distance) to surface water bodies (e.g. coastal waters, lakes, rivers, creeks, drainage basins, floodplains, vernal pools, wetlands, etc.).

4.6 Geology

Describe the regional and site specific geology including stratigraphy and structure. Include cross sections to show the subsurface stratigraphy.

4.7 Hydrogeology

Describe the regional and site specific hydrogeologic setting including any information concerning local aquifers, groundwater levels, gradients, flow direction, hydraulic conductivity, and velocity. Include potentiometric surface contour maps. Describe the beneficial uses of the groundwater (e.g. drinking water supply, agricultural water supply, etc.).

4.8 Groundwater Monitoring System

Describe the Facility's groundwater monitoring system including a table detailing the existing well construction. The table must, at a minimum, identify the following construction details for each well:

Well ID, Completion Date, Drilling Method, Borehole Diameter (inches), Well Casing Diameter and Type, Measuring Point Elevation (feet MSL), Borehole Depth (feet BGS), Depth of Well (feet), Screened Interval, Formation Screened, Slot Size & Type (inches), Filter Pack Material, Filter Pack Thickness, Type of Filter Pack Seal, Thickness of Filter Pack Seal, Pump System (dedicated or non-dedicated), Type of Pump and Approximate Depth to Water (feet BGS). If some of this information is not available, so indicate on the table with an "NA". BGS: Below Ground Surface, MSL: Mean Sea Level

The monitoring well locations must be shown on the facility map (see Section A.2 of this Attachment)

5. Existing Degree and Extent of Contamination

For each media where the Order identifies a release (e.g. soil, groundwater, surface water, air, etc.), describe the existing extent of contamination. This description must include all available monitoring data and qualitative information on the locations and levels of contamination at the Facility (both onsite and offsite). Include a general assessment of the data quality, a map showing the location of all existing sampling points and potential source areas and contour maps showing any existing groundwater plumes at the Facility (if groundwater release). Highlight potential ongoing release areas that would warrant use of interim corrective measures (see Section 8, Interim Corrective Measures).

5.1 Previous Investigations

List and briefly describe all previous investigations that have occurred at the Facility, who they were done for (i.e., agency) and agency contacts.

6. Potential Migration Pathways

6.1 Physical Properties of Contaminants

Identify the applicable physical properties for each contaminant that may influence how the contaminant moves in the environment. These properties could include melting point (degrees C), water solubility (mg/l), vapor pressure (mm Hg), Henry's law constant (atm-m3/mol), density

(g/cc), dynamic viscosity (cp), kinematic viscosity (cs), octanol/water partition coefficient (log Kow), soil organic carbon/water partition coefficient (log koc) and soil/water partition coefficients. Include a table that summarizes the applicable physical properties for each contaminant.

6.2 Conceptual Model of Contaminant Migration

Develop a conceptual model of contaminant migration. The conceptual model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual model is developed by looking at the applicable physical parameters for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to groundwater, etc.).

Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found (e.g., if a ground water contaminant has a low water solubility and a high density, then the contaminant will likely sink and be found at the bottom of the aquifer, phase: non-aqueous).

Include a discussion of potential transformation reactions that could impact the type and number of contaminants (i.e., what additional contaminants could expected as a result of biotic and abiotic transformation reactions given the existing soil conditions).

A typical conceptual model should include a discussion similar to the following: Benzene, ethylbenzene, toluene and xylenes are potential contaminants at the facility. Based on their high vapor pressures and relatively low water solubilities (see Henry's law constant), the primary fate of these compounds in surface soils or surface water is expected to be volatilization to the atmosphere. These mono-cyclic aromatic hydrocarbons may leach from soils into groundwater. The log koc (soil organic carbon/water partition coefficient) values for these compounds ranges from 1.9 to 4.0, indicating that sorption to organic matter in soils or sediments may occur only to a limited extent.

7. Potential Impacts of Existing Contamination

Describe the potential impacts on human health and the environment from any existing contamination and/or on-going activities at the Facility. This description must consider the possible impacts on sensitive ecosystems and endangered species as well as on local populations. Potential impacts from any releases to groundwater, surface water, soil (including direct contact with contaminated surface soil) and air (including evaporation of volatile organic compounds from contaminated soil) must be discussed.

7.1 Groundwater Releases

Identify all wells (municipal, domestic, agricultural, industrial, etc.) within a 1 mile radius of the facility. Include a summary of the most recent water sampling data available for any identified municipal or domestic supply wells.

Develop a well inventory table that lists the following items for each identified well:

> Well Designation, State ID, Reported Owner, Driller, Date of Completion, Original Use of Well, Current Use of Well, Drilling Method, Borehole Diameter (inches), Casing Diameter (inches), Perforated Interval (feet), Gravel Pack Interval (feet), Total Well Depth (Feet), Depth to Water (feet BGS) and Date of Water Level Measurement. If some of this information is not available, so indicate on the table with an "NA". BGS: Below Ground Surface

Include a regional map showing the Facility, groundwater flow direction (if known) and the location of all identified wells within a 1 mile radius of the Facility.

Identify and describe any potential groundwater discharge to surface water bodies.

Identify and list all relevant and applicable water standards for the protection of human health and the environment (e.g., maximum contaminant levels, water quality standards, etc).

7.2 Surface Water Releases

Discuss the Facility's potential impact on surface water. Describe the potential beneficial uses of the surface water (e.g., drinking water supply, recreational, agricultural, industrial, or environmentally sensitive). Identify all water supply intake points and contact areas within a 1 mile radius of the Facility. Include a summary of the most recent water sampling data available for each of the identified water supply intake points. Include a description of the biota in surface water bodies on, adjacent to, or which can be potentially affected by the release. Also summarize any available sediment sampling data.

Include a regional map showing the Facility, surface water flow direction, beneficial use areas, and the location of any identified water supply intake points within a 1 mile radius of the Facility.

7.3 Sensitive Ecosystems/Habitats

Discuss the Facility's potential impact on sensitive ecosystems.

8. Interim Corrective Measures and Stabilization Assessment

Identify all corrective measures that were or are being undertaken at the Facility to stabilize contaminant releases. Describe the objectives of the corrective measures including how the measure is mitigating a potential threat to human health and the environment. Summarize the design features of the corrective measure. Include a schedule for completing any ongoing or future work.

Identify and describe potential interim corrective measure alternatives that could be implemented immediately to stabilize any ongoing releases and/or prevent further migration of contaminants.

9. Data Needs

Assess all of the existing data and information concerning the Facility and determine what additional information must be collected to meet the objectives of

the RFI. The additional information must be sufficient to support the development of interim corrective measures for early action (if applicable) and provide the necessary data to complete the RFI. The RFI Workplan must detail how this additional information will be collected. For example, if well elevations and locations have not been accurately determined, the RFI Workplan must include a task for surveying all wells.

10. Miscellaneous (Optional)

    Include any other existing information that is pertinent to the RCRA Facility Investigation.

11. References

B. Corrective Measures Screening and Evaluation Report

The Corrective Measures Screening and Evaluation Report (CMSER) includes a preliminary identification and assessment of potential corrective measure alternatives that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contaminants.

The purpose of this report is to screen potential alternatives to eliminate those methods which appear to be inadequate, infeasible, unreliable, or unable to address contamination problems in a timely fashion. This report shall also identify any additional information that is needed to adequately evaluate and compare corrective measures alternatives. This information can include field work, treatability studies, computer modeling, literature searches, vendor contacts, etc. The RFI Workplan must describe how this additional information will be obtained (ie., field work necessary to obtain a key parameter).

1. Introduction

1.1 Purpose

Describe the purpose, objectives and limitations of the CMSER. Note whether the report is able to address corrective measures for some releases but not others due to insufficient information (e.g. off-site contamination is not adequately defined).

1.2 Site Description

Briefly summarize background, current operations, waste management and products produced at the site. Include a map that shows the general geographic location of the site.

1.3 Nature and Extent of Contamination

Briefly summarize the existing degree and extent of contamination. Describe the current site conceptual model, including expected contaminant sources, rates and direction of contaminant migration, and potential public health and environmental exposure pathways of concern. Provide tables that summarize existing contaminant data, isoconcentration maps for relevant contaminants, and facility maps showing known or expected source areas.

Define areas of contamination for which corrective measures will be evaluated.

2. Identification of Corrective Measure Alternatives

For each medium for which a release has been identified in the Order, discuss possible corrective measure alternatives that are both technically feasible and protective of human health and the environment.

For example: Soils are contaminated with volatile organic compounds, corrective action alternatives include:

- No Action
- Soil venting
- In situ bioremediation
- Excavation and incineration of hot-spots with capping
- Capping/containment only

3. Screening of Corrective Measure Alternatives

Describe each alternative and discuss the advantages and disadvantages of each with respect to implementability, effectiveness, reliability and cost. Site characteristics, waste characteristics and technology limitations must be considered when selecting possible corrective measure alternatives for future evaluation.

Identify any data which must be gathered to adequately assess each alternative. For example:

Proposed Alternative: Pump and Treat System

Data Needs: Ground Water Quality Characteristics (pH, total dissolved solids, etc.)

Extent of contaminant plume

Hydraulic characteristics of aquifer (hydraulic gradient, conductivity, etc)

Stratigraphy and structure of geologic setting

4. Summary

Include a discussion and table that summarizes the initial evaluation of corrective measures and data needs. The table should identify the alternative, feasibility, reliability, environmental impact (e.g., potential for generation of hazardous gas, non-protective, etc.), potential to protect human health and the environment, result of initial scoping (eliminate alternative or retain for future consideration) and additional field

investigation and other data gathering needs (e.g., treatability studies). Highlight the corrective measures that will be further evaluated in the Corrective Measure Study.

In addition, laboratory and/or field treatability studies should be proposed in the RFI Workplan for those corrective measures that will likely be implemented at the Facility. The overall investigation and cleanup process will be expedited if preliminary field studies of corrective measures are conducted during the RFI rather than the Corrective Measure Study.

4. References

C. RCRA Facility Investigation Workplan

The RCRA Facility Investigation (RFI) Workplan shall define the procedures necessary to:

1. Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any groundwater contamination in and around the Facility (only required for releases to groundwater);

2. Characterize the geology and hydrogeology in and around the Facility (only required for releases to groundwater and possibly for releases to soil);

3. Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any soil contamination in and around the Facility (only required for releases to soil);

4. Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any soil gas contamination in and around the Facility (may be required for releases to groundwater and/or soil depending on the circumstances);

5. Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any surface water contamination (includes surface water sediments) at the Facility (only required for releases to surface water);

6. Characterize the presence, magnitude, extent (horizontal and vertical), rate of movement and direction of any air releases at the Facility (only required for air releases);

7. Characterize any potential sources of contamination (required for all releases);

8. Characterize the potential pathways of contaminant migration (required for all releases);

9. Identify any actual or potential receptors (required for all releases);

10. Gather all necessary data to support a risk assessment (required for all releases);

11. Gather all necessary data to support interim corrective measures to stabilize ongoing releases and prevent further contaminant migration (required for all releases); and

12. Gather all necessary data to support the Corrective Measures Study (required for all releases) (This could include conducting pilot, laboratory and/or bench scale studies to assess the effectiveness of a treatment method).

The RFI Workplan shall describe all aspects of the investigation, including project management, sampling and analysis, well drilling and installation, quality assurance and quality control, health and safety and community involvement. If the scope of the investigation is such that more than one phase is necessary, the "Phase 1" RFI Workplan must include a summary description of each phase. The required format for an RFI Workplan is described below:

1. Introduction

Briefly introduce the Workplan. Discuss the Order requiring the RFI and how the Workplan is organized.

2. Investigation Objectives

Describe the objectives and critical elements of the RFI. State the general information needed from the site (e.g. soil chemistry, hydraulic conductivity of aquifer, stratigraphy, ground water flow direction, identification of potential receptors, etc.). The general information should be consistent with the data needs identified in the Current Conditions Report, the Corrective Measures Screening and Evaluation Report and the RFI Objectives.

3. Project Description

3.1 Facility Background

Summarize background, current operations, waste management, existing contamination and products produced at the facility. Include a map that shows the general geographic location of the Facility.

3.2 Summary of Field Investigation Activities

Summarize all field activities that are planned for the Facility. The activities should be broken down by task. Each task should then be summarized. Example tasks may include, but are not limited to the following:

Task 1: Surface Soil Sampling
Task 2: Subsurface Soil Boring
Task 3: Data Gathering to Support Interim Corrective Measures
Task 4: Monitor Well Installation
Task 5: Aquifer Testing
Task 6: Ground Water Sampling
Task 7: Potential Receptor Identification
Task 8: Treatability Studies

Describe how the proposed field work will meet the stated objectives.

4. Project Management

Discuss how the investigation will be managed, including overall management approach, levels of authority (include organization chart), lines of communication, project schedules, budget, and personnel. Identify any permits that will be required for implementing each task of the investigation (e.g. well drilling). Include a description of qualifications for personnel performing or directing the RFI, including contractor personnel.

5. Field Investigation

5.1 Description and Rationale for Sampling

For each task, describe the sampling activities and rationale for selection of sampling locations, depths, analytical parameters, etc. This description should include proposed sampling activities at each waste management unit under investigation.

For example, the following sections could be created:

5.1.1 Task 1: Surface Soil Sampling

5.1.1.1 Waste Management Unit 1

Describe unit or location where sampling will occur, analytical parameters, the rationale for selecting sample locations, etc.

5.1.1.2 Waste Management Unit 2

Describe unit or location where sampling will occur, analytical parameters, the rationale for selecting sample locations, etc.

5.1.2 Task 2: Subsurface Soil Boring

5.1.2.1 Waste Management Unit 3 Borings

Describe each unit or location where borings will occur, analytical parameters, the rationale for selecting sample locations and depths, etc.

Include the following information in the sampling task descriptions:

Describe where samples will be collected (location and depth), types of matrices that will be sampled and the analytical parameters. Explain the rationale for each sampling point, the total number of sampling points, and any statistical approach used to select these points. The conceptual model of contaminant migration developed in the Current Conditions Report should be considered when selecting sampling locations and depths. Discuss if sampling points were selected with a random, judgmental, or systematic approach, or a combination of these. If some possible sampling points are excluded, explain why. Include a map showing all proposed sampling locations, a table that lists the sampling point name, matrix, sample interval (in feet), analytical parameters and any comments.

Discuss the rationale for selection of the analytical parameters. The rationale must relate to site history and the RFI objectives. Give an explanation if all samples from the same matrix will not be analyzed for the same parameters. Include a sample analysis summary table that lists the given task number (including a section for field quality control samples), number of sample sites, matrix, and analytical parameters.

5.2 Field Methods and Procedures

Describe the field methods that will be used to complete each task.

For example, the following sections could be created:

5.2.1 Task 1: Surface Soil Sampling

Describe the site specific field procedures that will be used to complete Task 1.

5.2.2 Task 2: Subsurface Soil Boring

Describe the site specific field procedures that will be used to complete Task 2.

Include the following information in the field method descriptions:

Sample Analysis

List all analysis proposed for the project. Include a table that summarizes each analysis to be performed, the analytical method reference number (from EPA SW 846), the sample preparation and/or extraction method reference number (from SW 846), the analytes to be measured, practical quantitation limits and holding times. Provide the name(s) of the laboratory(s) that will be doing the analytical work. Indicate any special certifications or ratings of the laboratory. If a definite laboratory has not yet been selected, list at least 3 laboratories that are being considered for the analytical work.

Sample Collection

Describe how sampling points will be selected in the field, and how these locations will be documented and marked for future reference. If a sampling grid will be used, describe the dimensions and lay out planned for the grid.

Outline sequentially or step-by-step the procedure for collecting a sample for each matrix and each different sampling technique. Include well purging, housekeeping/cleanliness techniques, field measurements, sample preservation and sampling equipment (include material equipment is constructed of). The procedure described must ensure that a representative sample is collected, and that sample handling does not result in cross contamination or unnessary loss of contaminants. Special care in sample handling for volatile organic samples must be addressed.

Well Construction and Aquifer Testing

When new monitoring wells (or piezometers) are proposed, describe the drilling method, well design and construction details (e.g. depth of well, screen length, slot size, filter pack material, etc.) and well development procedures. Describe the rationale for selection of all well design and construction criteria (i.e., provide rationale for selection of slot size and screen length - FYI, EPA recommends 10 foot screen lengths).

When aquifer testing is proposed, describe the testing procedures, flow rates, which wells are involved, how water levels will be measured, test periods and any other pertinent information.

Disposal of Contaminated Materials

Describe the storage and disposal methods for all contaminated cuttings, well development and purge water, disposable equipment, decontamination water, and any other contaminated materials. The waste material must be disposed of in a manner consistent with local, state and federal regulations.

5.3 Field Quality Control Procedures/Samples

5.3.1 Replicates

Replicates (duplicates, triplicates) are additional samples that must be collected to check for sampling and analytical precision. Duplicate samples for all parameters and matrices must be collected at a frequency of at least 1 sample per week or 10 percent of all field samples, whichever is greater.

Replicates should be collected from points which are known or suspected to be contaminated. For large projects, replicates should be spread out over the entire site and collected at regular intervals. Identify the sampling points where replicate samples will be collected, or explain how the locations will be selected.

Replicates must be collected, numbered, packaged, and sealed in the same manner as other samples; replicate samples are assigned separate sample numbers and submitted blind to the laboratory.

5.3.2 Blank Samples

Blanks are samples that must be collected to check for possible cross-contamination during sample collection and shipment and in the laboratory. At least one blank sample per day must be done for all water and air sampling. The following types of blank samples may be required:

Equipment Blank: An equipment blank must be collected when sampling equipment (e.g., bladder pump) or a sample collection vessel (e.g., a bailer or beaker) is decontaminated and reused in the field.

Field Bottle Blank: This type of blank must be collected when sampling equipment decontamination is not necessary. The field bottle blank should be poured at a sampling point.

VOA Travel Blanks: These VOA (volatile organic analysis) blanks provide a check for cross contamination during transport. A blank sample must be shipped to the laboratory with each cooler containing water samples for volatile organic analysis. Trip blanks should be prepared in a clean environment (e.g., laboratory).

Blank samples must be prepared using analytically-certified organic-free (HPLC-grade) water for organic parameters and metal-free (deionized-distilled) water for inorganic parameters.

Blanks must be collected, numbered, packaged, and sealed in the same manner as other samples; blank samples are assigned separate sample numbers and submitted blind to the laboratory.

Describe how and when blank samples will be collected.

5.3.3 Equipment Calibration and Maintenance

The calibration, maintenance and operating procedures for all instruments, equipment and sampling tools must be based upon manufacturer's instructions. List all field equipment to be used, specify the maintenance/calibration frequency for each instrument and the calibration procedures.

5.3.4 Equipment Decontamination

Describe the decontamination procedure for all drilling and sampling equipment (including metal sleeves).

The following is a recommended generic procedure for decontamination of sampling equipment:

* Wash with non-phosphate detergent
* Tap water rinse
* 0.1N nitric acid rinse (when cross contamination from metals is a concern)
* Deionized/distilled water rinse
* Pesticide grade solvent rinse (when semivolatiles and non-volatile organic contamination may be present)
* Deionized/distilled water rinse (twice)
* Organic free water rinse (HPLC grade)

The above procedure is not appropriate for every field condition. Clearly document the decontamination procedures.

5.3.5 Sample Containers

Include a table that lists, for each type of sample and each analytical parameter, the preservation method and the size, type, grade and quantity of containers.

5.3.6 Sample Preservation

Describe the preservation methods that are to be used.

5.3.7 Sample Packaging and Shipment

Describe how samples will be packaged and shipped.

5.3.8 Sample Documentation

Discuss the use of all paperwork including field notebooks, record logs, photographs, sample paperwork, and Chain of Custody forms (include a blank copy in RFI Workplan Appendices) and seals.

Describe how sample containers will be labeled.

A bound field log book must be maintained by the sampling team to provide a daily record of events. At the beginning of each day's work, the following shall be recorded: Date, Time, Meteorological Conditions, Field Personnel Present, Level of Personal Protection and Signature of Person Making the Entry.

Field log books shall provide the means of recording all data regarding sample collection. All documentation in field books must be made in permanent ink. If an error is

made, corrections must be made by crossing a line through the error and entering the correct information. Changes must be initialed, no entries shall be obliterated or rendered unreadable. Entries in the log book must include, at a minimum, the following for each days sampling: Site Identification, Location of Sampling Points, Description of Sampling Points, Sample Identification Numbers, Number of Samples Collected, Time of Sample Collection, Number of QC Samples Collected, Sampling Team Members Names, Field Observations and Field Parameters.

5.3.9 Laboratory Quality Control Samples

Laboratories routinely perform matrix spike and laboratory duplicate analysis on field samples as a quality control check. A minimum of one field sample per week or 1 per 20 samples (including field blanks and duplicates), whichever is greater, must be designated as the "lab QC sample" for the matrix and laboratory duplicate analysis.

For water matrices, 2-3 times the normal sample volume must be collected for the laboratory quality control sample. Additional volume is usually not necessary for soil samples.

5.4 Standard Operating Procedures

If Standard Operating Procedures (SOPs) are referenced, the relevant procedure must be summarized in the RFI Workplan. The SOP must be specific to the type of tasks proposed and be clearly referenced in the RFI Workplan. The SOP must also be directly applicable, as written, to the RFI Workplan; otherwise, modifications to the SOP must be discussed. Include the full SOP description in the RFI Workplan appendix.

6. Quality Assurance and Quality Control

Describe the quality assurance objectives for the RFI. Define the process for insuring that these objectives are attained and that the data is acceptable. Define precision and accuracy. Include a summary table of laboratory quality assurance objectives that, at a minimum, lists: Parameter, Matrix, Practical Quantitation Limits (PQL), Spike Recovery Control Limits (%R), Duplicate Control Limits +/-(%), and QA Sample Frequency. Include a copy of the analytical laboratory quality assurance/quality control plan in the appendices of the RFI Workplan.

7. Data Management

Describe how investigation data and results will be documented, tracked and managed, including development of an analytical database. Identify and discuss personnel and data management responsibilities, all field, laboratory and other data to be recorded and maintained and any statistical methods that may be used to manipulate the data. The Data Management Section must also describe the basic elements of the RFI Report.

RFI Report Requirements

An RFI Report must be prepared that describes the entire site investigation and presents the basic results. The RFI Report must clearly present an evaluation of investigation results (e.g., all potential contaminant source areas must be identified, potential migration pathways must be described, and affected media shown, etc.).

The RFI Report must also include an evaluation of the completeness of the investigation and indicate if additional work is needed. This work could include additional investigation activities and/or interim corrective measures to stabilize contaminant release areas and limit contaminant migration. If additional work is needed, a Phase 2 RFI Workplan and/or Interim Corrective Measures Workplan must be submitted to EPA along with the RFI Report.

At a minimum, the RFI Report must include:

A summary of investigation results (include tables that summarize analytical results).

A complete description of the investigation, including all data necessary to understand the project in its entirety including all investigative methods and procedures.

A discussion of key decision points encountered and resolved during the course of the investigation.

Graphical displays such a isopleths, potentiometric surface maps, cross-sections, plume contour maps (showing concentration levels, isoconcentration contours), facility maps (showing sample locations, etc.) and regional maps (showing receptor areas, water supply wells, etc.) that describe report results. Highlight important facts such as geologic features that may affect contaminant transport.

Tables that list all chemistry data for each matrix investigated.

An analysis of current and existing groundwater data to illustrate temporal changes for both water chemistry and piezometric data (use graphics whenever possible).

A description of potential or known impacts on human and environmental receptors from releases at the facility. Depending on the site specific circumstances, this analysis could be based on the results from contaminant dispersion models.

A discussion of any upset conditions that occurred during any sampling events or laboratory analysis that may influence the results. The discussion must include any problems with the chain of custody procedures, sample holding times, sample preservation, handling and transport procedures, field equipment calibration and handling, field blank results that show potential sample contamination and any field duplicate results that indicate a potential problem. Summary tables must be provided that show the upset condition and the samples that could be impacted. The RFI QC Summary Forms (see Appendix A of Attachment 2) must be completed by the analytical laboratory and submitted as part of the RFI Report.

An assessment of the entire QA/QC program effectiveness

In addition to the RFI Report, EPA may require that the analytical results (database) be submitted on a floppy disk (EPA will specify the format). All raw laboratory and field data (e.g., analytical reports) must be kept at the Facility and be made available or sent to EPA upon request.

8. Health and Safety Plan

8.1 Objectives

Describe the goals and objectives of the RFI health and safety plan (must apply to on-site personnel and visitors). The health and safety plan must be consistent with the Facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985), all state and local regulations and other EPA guidance as provided.

8.2 Hazard Assessment

List and describe the potentially hazardous substances that could be encountered by field personnel during investigation activities.

Discuss the following:

Inhalation Hazards
Dermal Exposure
Ingestion Hazards
Physical Hazards

Overall Hazard Rating

Include a table that, at a minimum, lists: Known Contaminants, Highest Observed Concentration, Media, Symptoms/Effects of Acute Exposure.

8.3 Personal Protection/Monitoring Equipment

For each investigation task, describe personal protection levels and identify all monitoring equipment.

Describe any action levels and corresponding response actions (i.e. when will levels of safety be upgraded).

Describe decontamination procedures and areas.

8.4 Site Organization and Emergency Contacts

List and identify all contacts (include phone numbers). Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital. Describe site emergency procedures and any site safety organizations. Include evacuation procedures for neighbors (where applicable).

Include a Facility Map showing emergency station locations (first aid, eye wash areas, etc.).

9. Public Involvement

9.1 Introduction

Describe the public involvement goals and objectives for the RFI (e.g., provide the community with information updates and respond to inquiries, provide for citizen input and involvement).

The amount of public involvement work must be consistent with the nature and degree of community concerns and with any state or federal requirements. The public involvement program should be flexible and able to respond to changing public concerns as the corrective action process proceeds from the RFI to the CMS and into Corrective Measure Implementation.

At a minimum, the Respondent must notify the community of the RFI (summary of existing contamination, RFI purpose, goals, etc.) and then later advise the community of the RFI findings by developing and distributing two fact sheets. It is important that these fact sheets be written clearly so that the public will understand the information.

9.2 Public Involvement Background

Identify and describe any known issues or community concerns. Indicate if any community or local officials have been interviewed. Acquire and describe demographic information about the potentially impacted community.

9.3 Techniques to Reach Public Involvement Goals

Many community relations techniques may be used to accomplish the objectives. These techniques include: fact sheets, press releases, informal community workgroup meetings, community advisory committees, community meetings, information repositories, mailing lists and public service announcements. Include a detailed description of how the local community will be contacted and informed. At a minimum, the following items must be developed as described below:

9.3.1 Mailing List

Establish and maintain a mailing list of all local officials, interested, affected and potentially affected private citizens, residents within a one-half mile radius of the facility, and news media representatives who should receive fact sheets or other information regarding the investigation/mitigation activities at the facility. The mailing list should be expanded as time goes on to include all interested persons. Include the mailing list in the appendices of the RFI Workplan.

9.3.2 Information Repository

Establish and maintain an information repository at a location convenient to public access (e.g. local library). The purpose of the information repository is to allow open and convenient public access to all site-related documents approved by the agency for public disclosure. At a minimum, the repository for a site must include copies of the following:

* Administrative Order or Consent Decree
* EPA Approved RFI Workplans
* EPA Approved RFI Reports
* EPA Approved Interim Measures Workplans
* EPA Approved Corrective Measures Study Workplans
* EPA Approved Corrective Measures Study Report
* Statement of Basis for Remedy Selection

Other Information:

* Copies of RCRA and CERCLA;
* Copies of press releases and newspaper clippings that refer to the site;
* Brochures, fact sheets, and other information about RCRA program and the specific site;
* Any other relevant material (e.g. published studies on the potential risks associated with specific chemicals that have been found at the site)

9.3.3 Fact Sheets

Prepare a minimum of two facility fact sheets:

Facility Fact Sheet 1 - Facility Fact Sheet 1 must include a summary of existing contamination at the Facility, a summary of possible impacts on the local community (e.g., drinking water supplies, etc.), RFI objectives, a synopsis of upcoming tasks and must direct the community to the information repository for additional information. It must be submitted to EPA along with the RFI Workplan and be distributed to all persons on the facility mailing list within fifteen (15) calendar days after EPA approves the RFI Workplan, or otherwise specified by EPA.

Facility Fact Sheet 2 - Facility Fact Sheet 2 must include a summary of the RFI report findings and a synopsis of upcoming events. It must be submitted to EPA along with the RFI Report and be distributed to all persons on the facility mailing list within fifteen (15) calendar days after EPA approves the RFI Report, or otherwise specified by EPA.

10. References

APPENDIX A

RCRA FACILITY INVESTIGATION QC SUMMARY FORMS

REGION 9 RCRA FACILITY INVESTIGATION QC SUMMARY
PART 1: SUMMARY OF QC LIMITS

Inorganic Analyses
Method:

LABORATORY:
SUBMITTED BY:
ORGANIZATION:
DATE:

SITE/PROJECT:
NUMBER OF SAMPLES:
MEDIA:

QC SUMMARY ELEMENT	LABORATORY CONTROL LIMITS	FREQUENCY PERFORMED
LABORATORY BLANKS		
SAMPLE DUPLICATE %RPD		
LABORATORY CONTROL SAMPLE RECOVERY		
STANDARD ADDITION RESULTS*		
ICP SERIAL DILUTION %D		
SPIKED SAMPLE RECOVERY		
INITIAL CALIBRATION VERIFICATION %D		
CONTINUING CALIBRATION VERIFICATION %D		
INTERFERENCE CHECK SAMPLE RECOVERY		

* expressed as the correlation coefficient

Describe any method modifications or specific problem areas:

1. Does the laboratory have access to the RCRA Facility Investigation (RFI) Workplan? YES/NO
2. Are the Control Limits listed above the same as the limits in the RFI Workplan? YES/NO
3. Were there QC results outside the stated Control Limits or Frequency listed above? YES/NO
4. If yes to 3, report, in PART 2, all results outside QC limits or frequency listed above.
5. Describe any difficulties and/or deviations encountered during the analysis (attach additional sheet if needed)

All information reported on this form are certified true and correct.

Name: _____

Title: _____

Date: _____

REGION 9 RCRA FACILITY INVESTIGATION QC SUMMARY
PART 2: SUMMARY OF QC RESULTS FOR INORGANIC ANALYSIS
Complete for all parameters which do not meet QC criteria specified in Part 1

LABORATORY: _____
SUBMITTED BY: _____
DATE: _____
SITE/PROJECT: _____

NUMBER OF SAMPLES: _____
MEDIA: _____

ANALYSIS DATE	SAMPLE ID	COMPOUND/ ANALYTE	METHOD	BLANK RESULT	BLANK TYPE	PQL	SAMPLE DUPLICATE RPD	LCS PERCENT RECOVERY	STANDARD ADDITION R2	CONTINUING VERIFICATION PERCENT	SPIKED SAMPLE RECOVERY	ICS RECOVERY AREA

REGION 9 RCRA FACILITY INVESTIGATION QC SUMMARY
PART 1: SUMMARY OF QC LIMITS

Organic Analyses
Method:

LABORATORY:
SUBMITTED BY:
ORGANIZATION:
DATE:

SITE/PROJECT:
NUMBER OF SAMPLES:
MEDIA:

QC SUMMARY ELEMENT	LABORATORY CONTROL LIMITS	FREQUENCY PERFORMED
LABORATORY BLANKS		
INITIAL CALIBRATION-%RSD		
CONTINUING CALIBRATION-%D		
MATRIX SPIKE/SPIKE DUPLICATE RECOVERY		
MATRIX SPIKE/SPIKE DUPLICATE %RPD		
SURROGATE PERCENT RECOVERY		
INTERNAL STANDARD AREA		
SECOND COLUMN CONFIRMATION	NA	

1. Method surrogates used:

2. Internal standards used:

3. Describe any method modifications or specific problem areas:

1. Does the laboratory have access to the RCRA Facility Investigation (RFI) Workplan? YES/NO

2. Are the Control Limits listed above the same as the limits in the RFI Workplan? YES/NO

3. Were there QC results outside the stated Control Limits or Frequency listed above? YES/NO

4. If yes to 3, report, in PART 2, all results outside QC limits or frequency listed above.

5. Describe any difficulties and/or deviations encountered during the analysis (attach additional sheet if needed)

All information reported on this form are certified true and correct.

Name: _____

Title: _____

Date: _____

REGION 9 RCRA FACILITY INVESTIGATION QC SUMMARY
PART 2: SUMMARY OF QC RESULTS FOR ORGANIC ANALYSIS
Complete for all parameters which do not meet QC criteria specified in Part 1

LABORATORY: _____ NUMBER OF SAMPLES: _____
SUBMITTED BY: _____ MEDIA: _____
DATE: _____
SITE/PROJECT: _____

ANALYSIS DATE	SAMPLE ID	COMPOUND/ ANALYTE	METHOD	BLANK RESULT	BLANK TYPE	PQL	MS/MSD %RPD	MS/MSD PERCENT RECOVERY	INITIAL CALIBRATION %RSD	CONTINUING CALIBRATION %D	SURROGATE PERCENT RECOVERY	INTERNAL STANDARD AREA

Attachment 3

Integrated Risk Information System Data

---------<<< Tetrachloroethylene >>>---------

CLEAN WATER ACT (CWA)

AMBIENT WATER QUALITY CRITERIA, Human Health

Water and Fish Consumption: 8.0E-1 ug/L

Fish Consumption Only: 8.85E+0 ug/L

Discussion -- Tetrachloroethylene is classified as a carcinogen, and under the assumption of no threshold for a carcinogen, the recommended WQC is zero. However, if zero cannot be obtained and exposure is by ingestion of water and aquatic organisms, 0.8 ug/L is associated with an upper-bound excess lifetime risk of 1.0E-6 [other upper bound risk levels to consider: 1.0E-5 (8.0 ug/L) and 1.0E-7 (0.08 ug/L)]. If exposure is only by ingestion of aquatic organisms, the WQC associated with an excess lifetime risk of 1.0E-6 is 8.85 ug/L.

Reference -- 45 FR 79318 (11/28/80)

---------<<< Trichloroethylene >>>---------

CLEAN AIR ACT (CAA)

CAA REGULATORY DECISION

Action -- Intent to list under Section 112

Discussion -- Trichloroethylene (TCE) is a probable human carcinogen (EPA Group B2) and according to EPA's preliminary risk assessment from ambient air exposures, public health risks are significant (4.1 cancer cases/year and maximum lifetime individual risks of 9.4xE-5). Thus, EPA indicated that it intends to add TCE to the list of hazardous air pollutants for which it intends to establish emission standards under section 112(b)(1)(A) of the Clean Air Act. The EPA will decide whether to add TCE to the list only after studying possible techniques

that might be used to control emissions and further assessing the public health risks. The EPA will add TCE to the list if emissions standards are warranted.

Reference -- 50 FR 52422 (12/23/85)

EPA Contact -- Emissions Standards Division, OAQPS
(919)541-5571 / FTS 629-5571

CLEAN WATER ACT (CWA)

AMBIENT WATER QUALITY CRITERIA, Human Health

Water and Fish Consumption -- 2.7E+0 ug/L
Fish Consumption Only -- 8.07E+1 ug/L

Discussion -- For the maximum protection from the potential carcinogenic properties of this chemical, the ambient water concentration should be zero. However, zero may not be attainable at this time, so the recommended criteria represents a E-6 estimated incremental increase of cancer risk over a lifetime.

Reference -- 45 FR 79318 (11/28/80)
EPA Contact -- Criteria and Standards Division, OWRS
(202)475-7315 / FTS 475-7315

----------<<< 1,1-Dichloroethylene >>>----------

EVIDENCE FOR CLASSIFICATION AS TO HUMAN CARCINOGENICITY

WEIGHT-OF-EVIDENCE CLASSIFICATION
Classification -- C; possible human carcinogen
Basis -- Tumors observed in one mouse strain after inhalation exposure is the basis for this classification. Other studies were of inadequate design. Vinylidene chloride is mutagenic, and a metabolite is known to alkylate and to bind covalently to DNA. It is structurally related to the known human carcinogen, vinyl chloride.

SAFE DRINKING WATER ACT (SDWA)

MAXIMUM CONTAMINANT LEVEL GOAL (MCLG) for Drinking Water

Value (status) -- 7 ug/L (Final, 1985)

Discussion -- An MCLG of 7 ug/L for 1,1-dichloroethylene is proposed based on an RfD and an assumed drinking water contribution of 20%. The RfD was calculated based on the DWEL of 350 ug/L from an animal study in which liver effects were noted. An additional safety factor of 10 (for carcinogenicity) was applied.

Reference -- 50 FR 46880 Part III (11/13/85)

EPA Contact -- Criteria and Standards Division, ODW (202)382-7571 / FTS 382-7571; or Drinking Water Hotline / (800)426-4791

MAXIMUM CONTAMINANT LEVEL (MCL) for Drinking Water

Value (status) -- 7 ug/L (Final, 1987)

Reference -- 52 FR 25690
EPA Contact -- Criteria and Standards Division, ODW (202)382-7571 / FTS 382-7571; or Drinking Water Hotline / (800)426-4791

CLEAN WATER ACT (CWA)

AMBIENT WATER QUALITY CRITERIA, Human Health

Water and Fish Consumption -- 3.3E-2 ug/L

Fish Consumption Only -- 1.85E+0 ug/L

Discussion -- For the maximum protection from the potential carcinogenic properties of this chemical, the ambient water concentration should be zero. However, zero m, Gage and Jefferson, and the Lynnwood, Silverado and Sunnyside. The relationships of these formations, thicknesses, lateral extent and permeabilities and extent of separating formation are not well characterized. (California Department of Water Resources Bulletin 104).

In June 1988, Respondent's contractor, ENSR, drilled a ground water monitoring well at the Facility. At a surface elevation of 210 feet above sea level, ground water was encountered at 75 feet below

Attachment 4

Figures from Text of 3008(h) Order

REFERENCE: USGS 7.5 MINUTE SERIES
WHITTIER QUADRANGLE 1981

ERT

FIGURE 1, SITE LOCATION MAP

**12504 WHITTIER BOULEVARD,
WHITTIER, CALIFORNIA**

DRAWN BY: BM	DATE: 8/26/88	PROJECT NO.: 6715-001
CHK'D BY:	REVISED:	DWG.NO.:

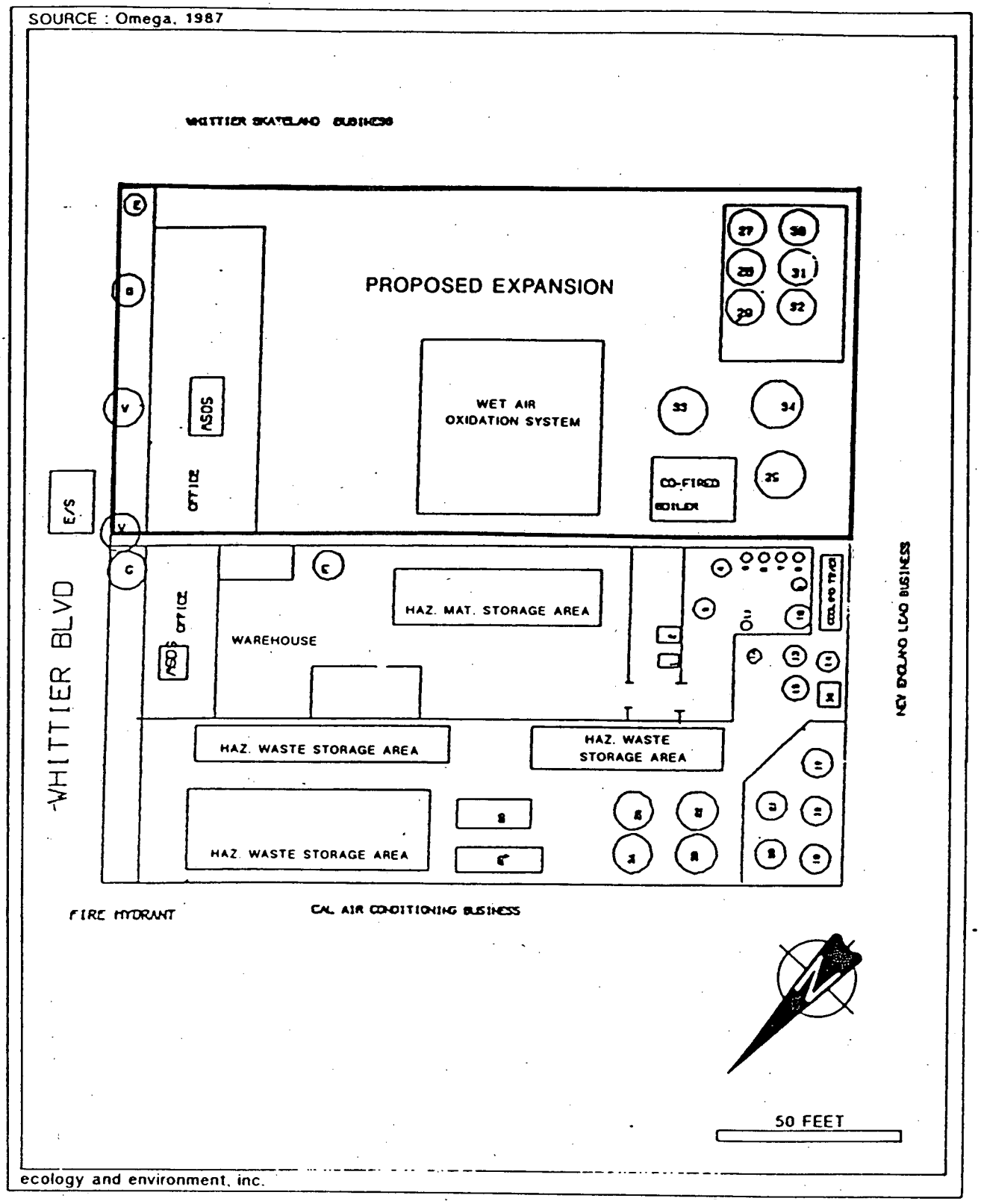


FIGURE 2. FACILITY MAP
OMEGA CHEMICAL CORPORATION
12504 WHITTIER BLVD.
WHITTIER, CA

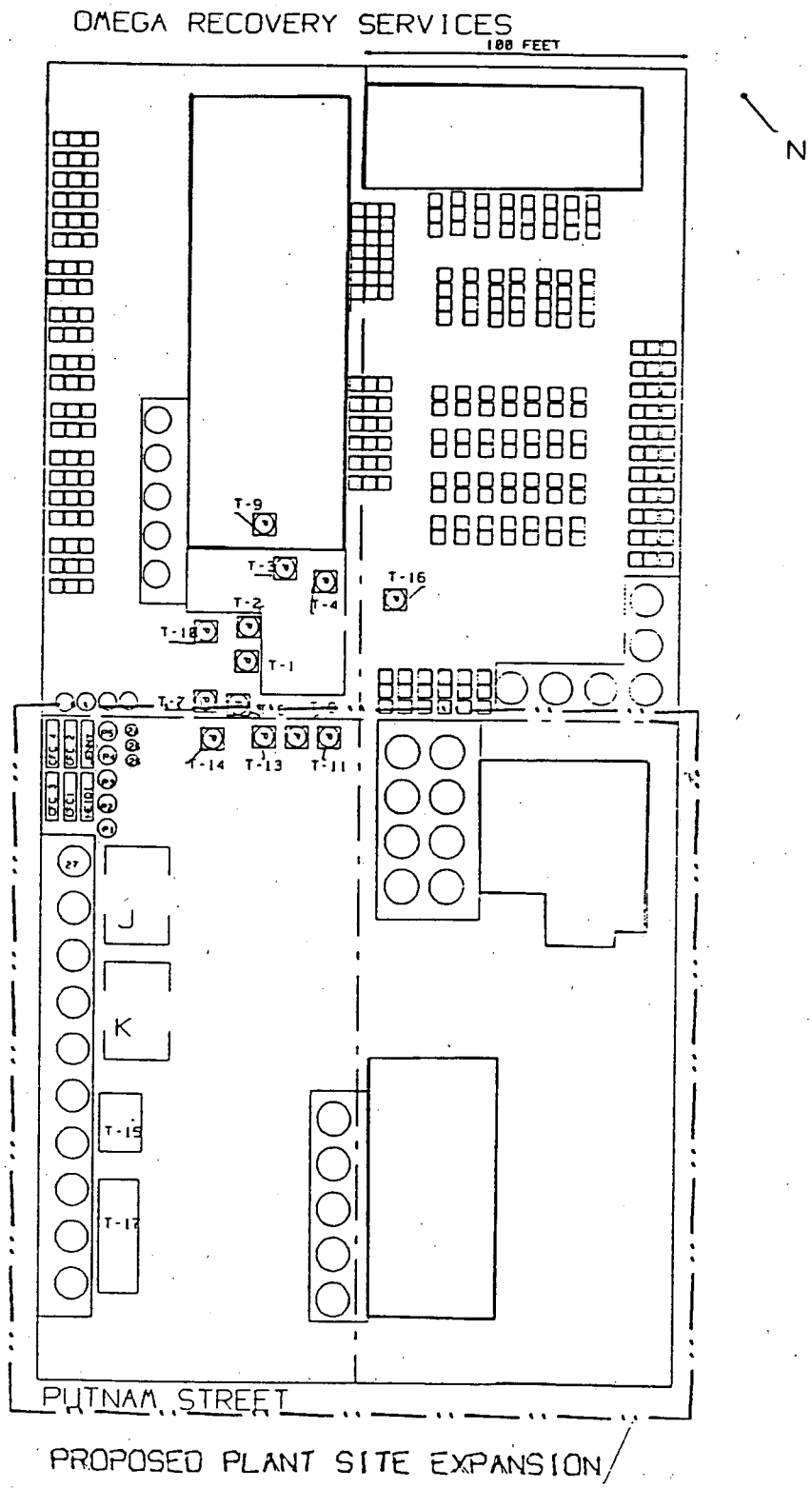
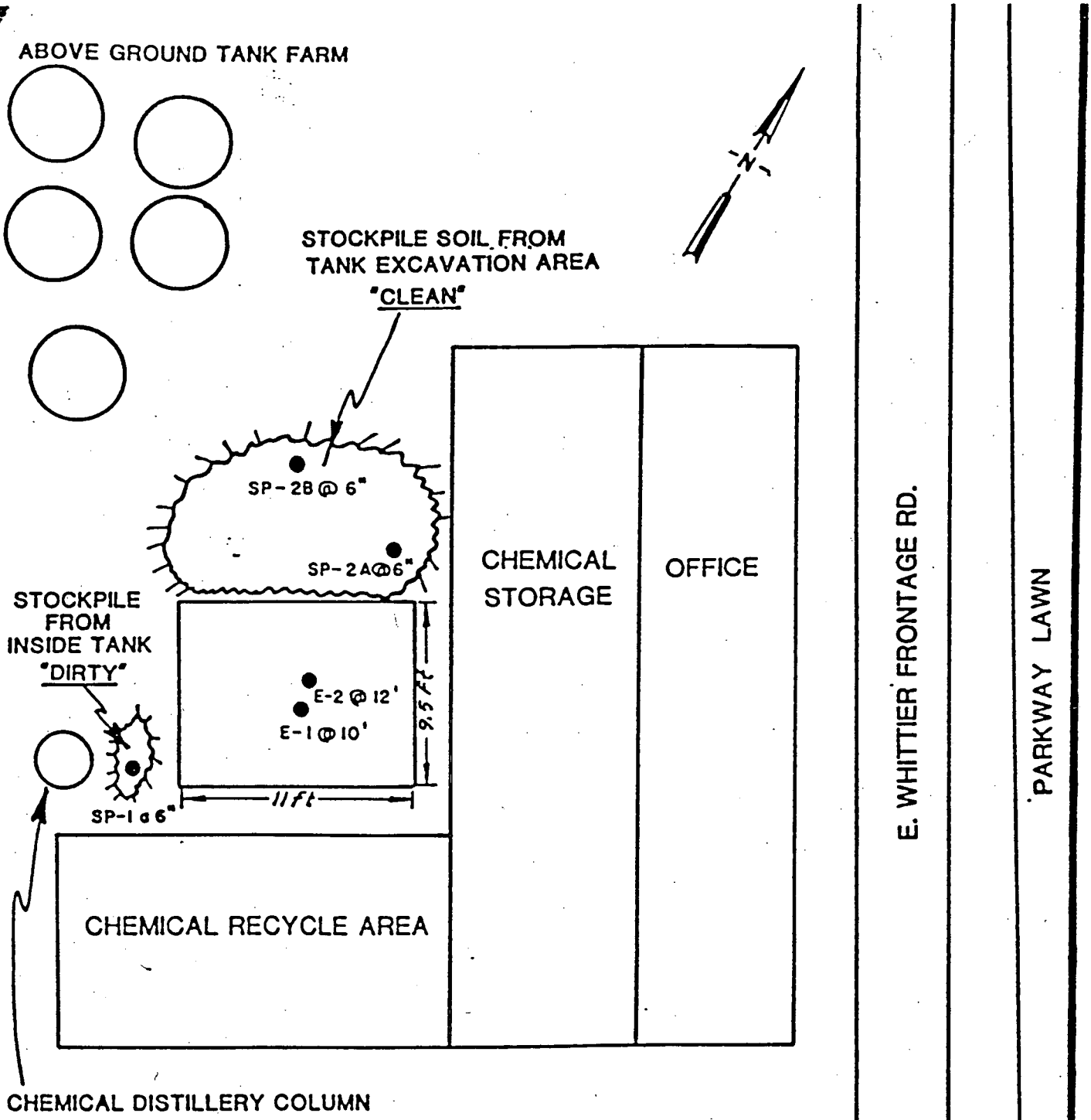

OMEGA RECOVERY SERVICES
100 FEET
N
T-9
T-3
T-16
T-4
T-2
T-18
T-1
T-7
T-14
T-13
T-11
J
K
T-15
T-17
PUTNAM STREET
PROPOSED PLANT SITE EXPANSION

FIGURE 3.



(NOT TO SCALE)

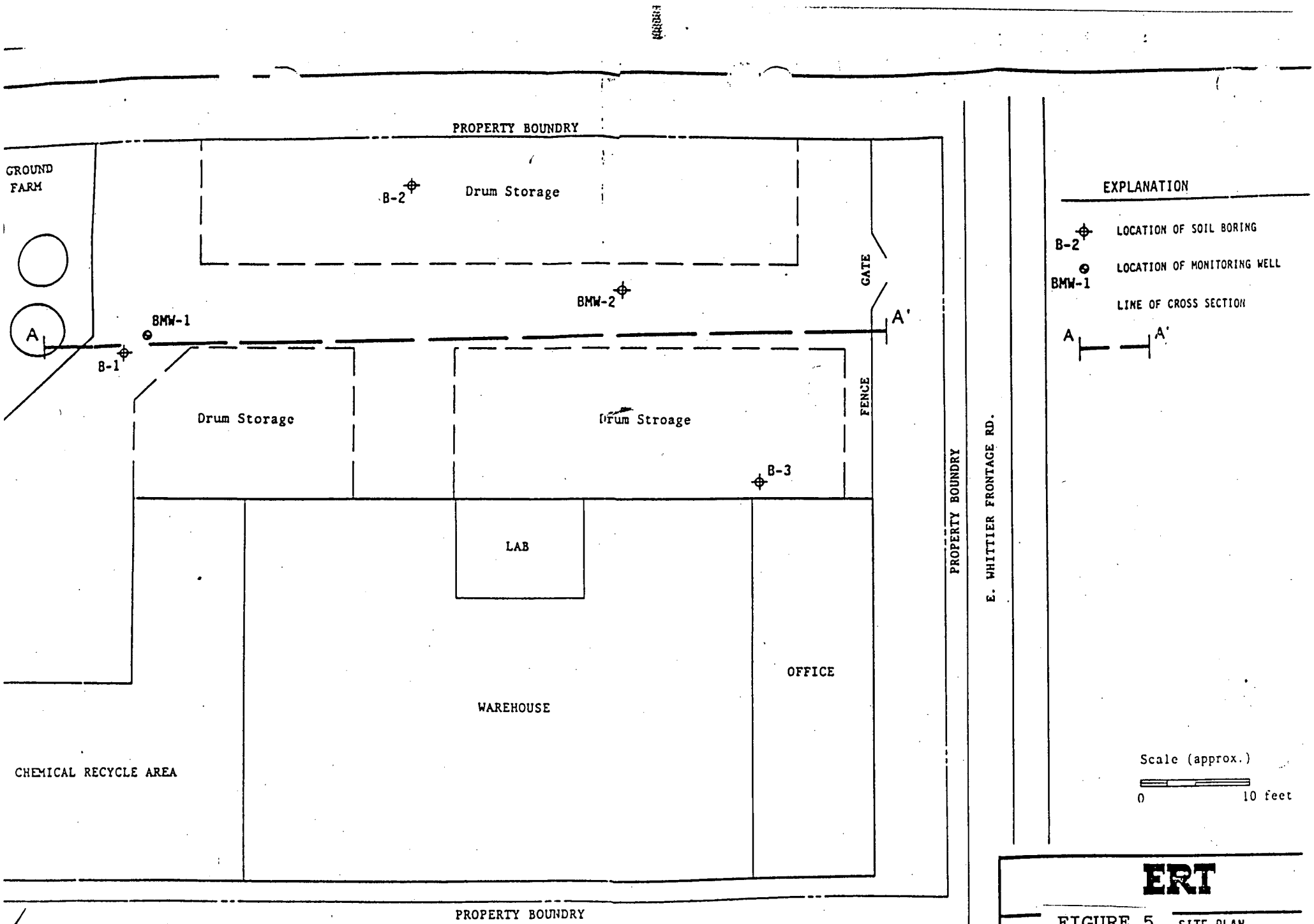
FIGURE 4.

RIPPY TRUST

12504 E. WHITTIER BLVD. WHITTIER, CA

Proj: 40870825-02	Scale: None	Date: 8/26/87
Engineer/Geologist: GK	Drafting By: nh	

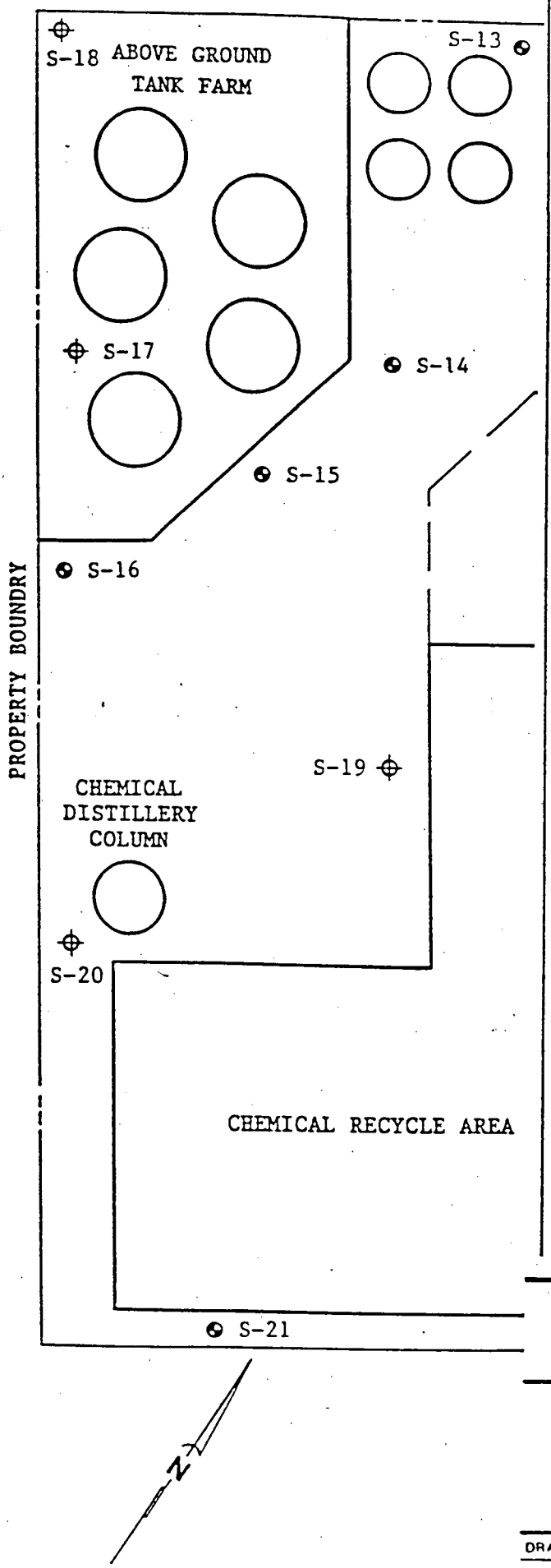
LEIGHTON and ASSOCIATES, INC.



ERT

FIGURE 5. SITE PLAN SHOWING LOCATIONS OF SOIL BORINGS, MONITORING WELLS, & 2nd CROSS SECTION

DRAWN BY: Bill | DATE: | PROJECT NO: 67



EXPLANATION

- LOCATION OF SAMPLING POINT
- LOCATION OF SAMPLING POINT NOT ANALYZED

SCALE (APPROX.)

0 5 10 FEET

ERT

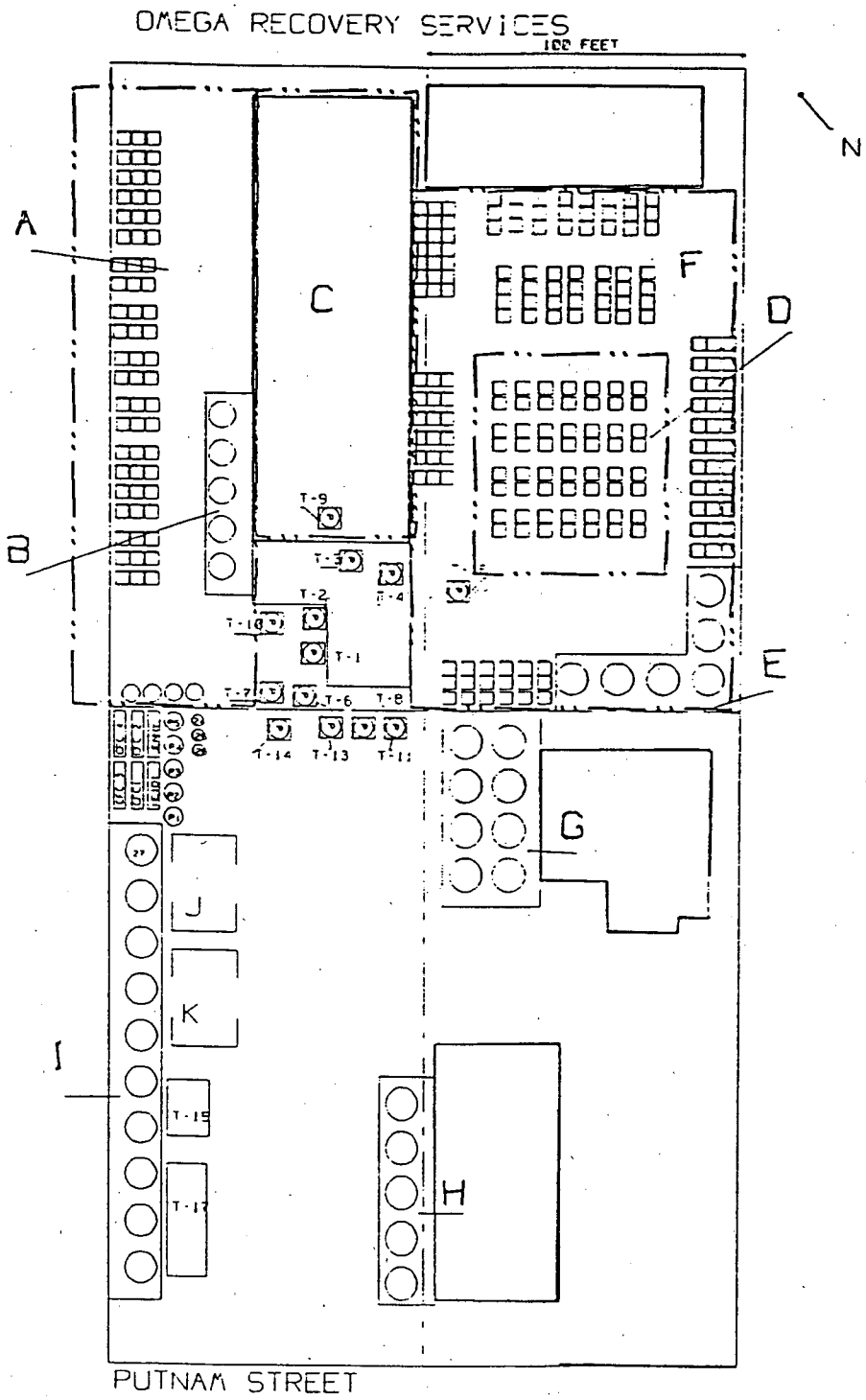
A RESOURCE ENGINEERING COMPANY

SITE PLAN

SOIL VAPOR SAMPLING POINTS

FIGURE 6.

DRAWN BY:	DATE:	PROJECT NO.:
CHK'D BY:	REVISED:	DWG.NO.:



DRUM AND TANK STORAGE LOCATIONS

FIGURE 7a.

Containment Areas - Capacity

Area	Tank #/or # of Drums	Capacity Required (gal.)	Capacity Available (gal.)
A	(971 Drums)	5,341	66,473
B	Tanks 1,2,3,4,5	5,000	9,167
C	(50 Drums)	275	66,473 *
D	(840 Drums)	4,625	109,208**
E	Tanks A,B,C,D,E,F	10,000	18,475
F	(2112 Drums)	11,616	109,208**
G	Tanks 7 to 14	10,000	22,122
H	Tanks 15 to 19	10,000	13,127
I	Tanks 27 to 36	8,000	32,657
J	(120 Drums)	660	1,870
K	(120 Drums	660	1,870

* This Area C is combined with Area A because of the possibility of drainage to A.
** Areas D & F are combined into one combined capacity requirement.

FIGURE 7b.

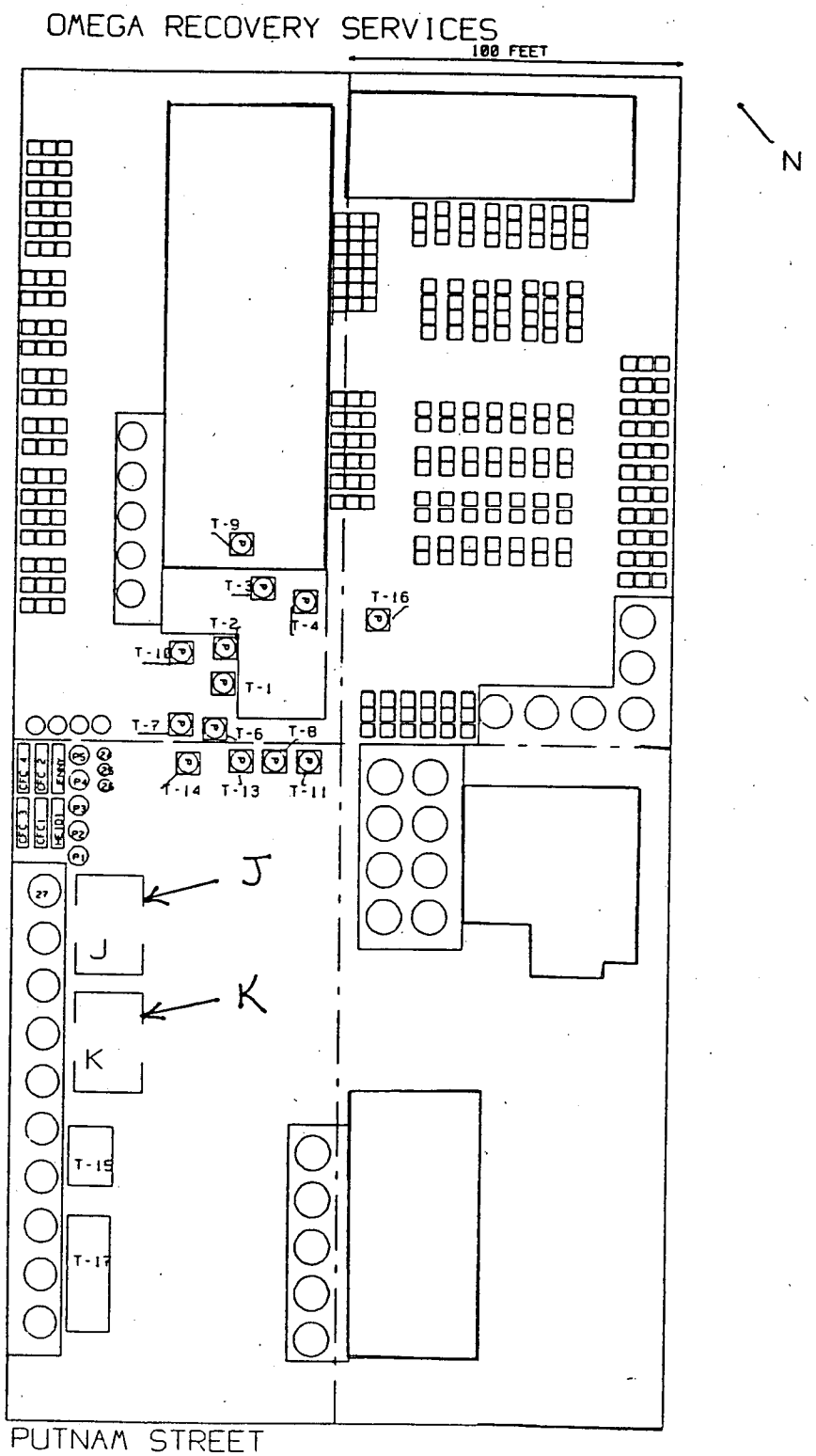


FIGURE 8.

Proposed New Drum Storage Areas

Attachment 5

Hazardous Wastes Managed at the Omega Chemical Corporation

In its original RCRA Part A permit application dated October 7, 1980, Respondent identified the following hazardous wastes by waste number, as those that are handled at the Facility. The descriptions were obtained from 40 C.F.R. Part 261, Subpart D:

EPA Hazard No.	Description
K054	(not listed in 40 C.F.R. Part 261)
D002	Corrosive hazardous waste
D001	Ignitable Hazardous waste
F001	spent halogenated solvents used in degreasing
F002	spent halogenated solvents
F003	spent non-halogenated solvents
F004	spent non-halogenated solvents
F005	spent non-halogenated solvents
U002	acetone
U031	n-Butyl alcohol
U075	dichlorodifluoromethane
U080	methylene chloride
U112	ethyl acetate
U121	methane, trichlorofluoro-
U154	methanol
U159	methyl ethyl ketone
U210	tetrachloroethylene
U213	tetrahydofuran
U220	toluene
U226	ethane, 1,1,1-trichloro-
U229	(not listed in 40 C.F.R. Part 261)
U239	benzene, dimethyl-

In its revised Part A dated October 8, 1987 (the "Revised Part A"), Respondent described the following hazardous wastes handled at the Facility:

EPA Hazard No.	Description
D001	Ignitable Waste (Organic Liquids)
D002	Corrosive Waste
D003	Reactive Waste
D004	Arsenic
D005	Barium
D006	Cadmium
D007	Chromium
D008	Lead
D009	Mercury
D010	Selenium
D011	Silver
D012	Endrin
D013	Lindane
D014	Methoxychlor
D015	Toxaphene
D016	2,4-D
D017	2,4,5-TP Silvex
F001	Spent halogenated solvents used in degreasing
F002	Spent halogenated solvents
F003	Spent non-halogenated solvents
F005	Spent non-halogenated solvents
F007	Spent cyanide solutions
F008	Plating bath sludges
F009	Spent stripping solutions
F010	Quenching solutions
F011	Spent cyanide solutions
F020	Wastes from the manufacturing of pesticide derivatives
F021	Wastes from the manufacturing/use of pentachlorophenol and intermediates and derivatives
F022	Wastes from the manufacturing/use of tetra-,penta-, or hexachlorobenzene
F027	Wastes and discarded pesticide formulations
F028	Residues resulting from the incineration or thermal treatment of soil contaminated with EPA Hazardous Wastes Nos. F021, F022, F023, F026, and F027
K001	Wastes from wood processing processes
K002-8	Wastes from inorganic pigment processing
K009-30	Wastes from organic chemical processing/uses
K094-96	
K083,K085	

EPA Hazard No.	Description
K103-5	Wastes from the manufacture/use of organic chemicals
K031-43	Wastes from the manufacturing/use of pesticides
K097,K098	Wastes from the manufacturing/use of pesticides
K048-52	Wastes from the petroleum refining processes and uses
K062	Wastes from steel finishing operations
K086	Wastes from ink formulation and processing/uses
K084	Wastes from veterinary pharmaceuticals
K101	Wastes from veterinary pharmaceuticals
P001-122	Wastes containing any of the P series
U001-U249	Wastes containing any of the U series

Respondent filed Notification of Hazardous Waste Activity dated September 24, 1990, addressing newly included wastes in accordance with the Toxicity Characteristic rule (40 C.F.R. ¶261.24). The revised Notification lists the following waste:

EPA Hazard No.	Description
D018	benzene
D019	carbon tetrachloride
D020	chlordane
D021	chlorobenzene
D022	chloroform
D023	o-cresol
D024	m-cresol
D025	p-cresol
D026	cresol
D027	1,4-dichlorobenzene
D028	1,2-dichloroethane
D029	1,1-dichloroethylene
D035	methyl ethyl ketone
D037	pentachlorophenol
D038	pyridine
D039	tetrachloroethylene
D040	trichloroethylene
D043	vinyl chloride